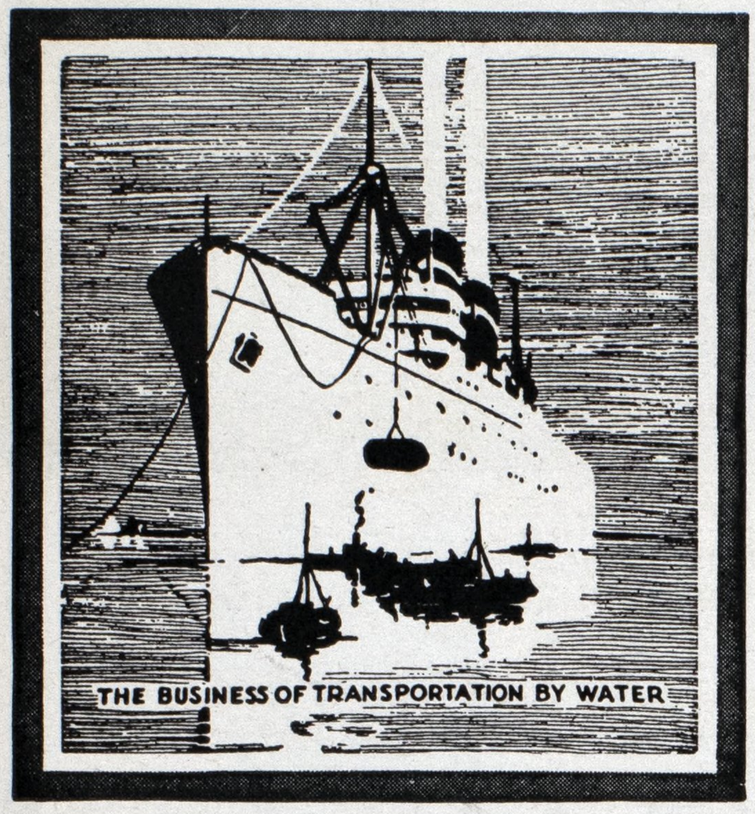
Marine Review

The National Publication Covering the Business of Transportation by Water

CLEVELAND **FOUNDED 1878** **NEW YORK**



Published monthly by The Penton Publishing Co., Cleveland, Ohio, U. S. A.

Cleveland Office, Penton Bldg.
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Subscription United States and its possessions, $3 per year; Canada $4.00; Great Britain and other Foreign Countries, £1:0:0. Single copies 35 cents. Back numbers over three months 50 cents. Cable addresses: Penton, Cleveland, and Irotrapen, London.

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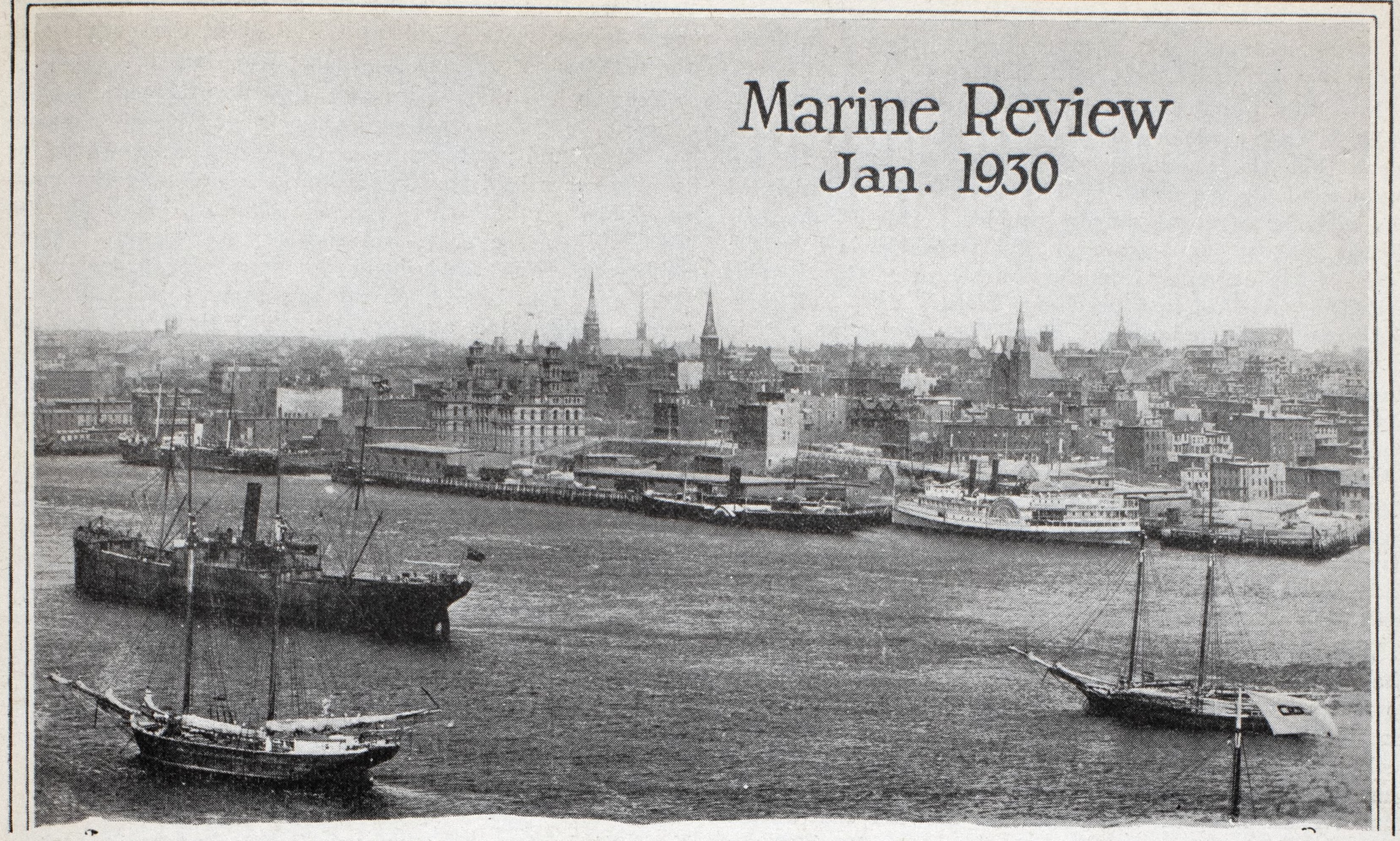


Saint John, N. B., Canada's Principal Winter Port on the Atlantic—Ranks Third after Montreal and Vancouver as All-year-round Port

Build an American Merchant Marine for Use in Overseas Trade

Editorial

WHEN the merchant marine act of 1928, known as the Jones-White bill, was passed by congress and signed by President Coolidge May 23, 1928 there were many who were skeptical, who had no faith that this measure would be of practical value for the purpose of fostering a merchant marine of our own in the overseas trade routes over which the commerce of the country moves. These skeptics were mistaken and it can be said now that even those who seemed to be, at the time, somewhat over optimistic have proven to be nearer right. As a result of the provisos of this act and the energetic and sympathetic execution of the law, all of the major shipyards of the country show an activity not equalled since war days.

No less than twenty-five established services between the United States and many commercially important foreign countries are now in steady operation with vessels maintaining definite schedules. All of these services are given substantial aid in the form of payments for carrying the mail and for maintaining lines of communication with American flag ships. The total annual payments made by the post office department to these services now exceed $13,000,000. A large number of important contracts for new ship construction have been placed and work is progressing rapidly toward the completion of these ships. In each instance where contracts for new ships have been let, the operator has been allowed a loan from the construction loan fund of the shipping board amounting to three-quarters of the cost. The low rate of interest which these loans carry materially helps to equalize the higher cost of shipbuilding in American yards as compared with the cost of building ships abroad.

Pursuing exactly the same procedure which has led to practical results for steamship owners and shipbuilders in the contracts just outlined, the post office department, at the very definite prompting of President Hoover, is now energetically offering proposals for twelve to fifteen additional services in the foreign trade. In these proposals are included elaborate requirements for the building of new ships equal to the very finest now afloat

under any flag. These new building requirements and a complete summary of existing mail contracts will be found in detail elsewhere in this issue.

Now this practical activity, bringing such definite results, is very commendable and there is unanimous agreement that the merchant marine act of 1928 and the manner of its execution represents a sound solution of the difficult merchant marine problem. One of the evidences that it is a practical and workable law is the form of the criticism from foreign sources. One British criticism published in a prominent London daily and coming from that publication's New York correspondent is so patently the result of hope rather than fact, that it is amusing. The headlines indicate how little to the liking of this particular British publication is the successful operation of the law. The item referred to is headed "American Plan For Shipping;" then "Decided Lack of Enthusiasm;" then "Regarded as Risky Venture" and then finally the same bugaboo; "Foreign Competition Too Keen." If anything ever was the wish, rather than the facts this certainly is and it is in no sense of the word accurate.

Well informed British shipping men realize too well that the United States is determined to establish and to foster by every means possible an American flag merchant marine. The actual leaders of government have looked at the map of the world and have decided, with the completest kind of accurate information at hand, that certain lines of communication between the United States and foreign countries should be maintained by American flag ships, not of course, with any idea of forcing the ships of other nations out of such runs, but merely to insure that the United States shall have regular and dependable communication with these points at all times, and under all circumstances. What could be sounder and more logical than this?

This time the American merchant marine is at the beginning of a sound practical expansion which cannot be stopped. Its motto should be to "let live" but with an equal determination "to live." There is a strong bond between all men who go to sea and the time will never come when the ships and men of all maritime countries in the world will not be welcome in American ports and by the same token we believe that American ships and sailors will always be welcome in foreign ports.

Fast Transatlantic Liners

THE preparation of plans for ocean liners of the highest class, approaching 1000 feet in length and a speed of 29 knots or over, is a huge task. British, German, French and Italian naval architects and shipbuilders have all had more or less experience in the design and construction of large, fast merchant vessels, while in the United States nothing approaching the great liners in size and speed has yet been attempted. But American engineers and shipbuilders have to their credit the fastest large ships afloat in the aircraft carriers LEXINGTON and SARATOGA. From the purely naval architectural and marine engineering aspects the problems are not dissimilar. There is, however, a vast and important difference, and it is this gap in experience that must be bridged with acquired knowledge and sound original engineering.

In the architectural and artistic phase some valuable experience has been gained in the complete interior rebuilding of the LEVIATHAN and in some of the recent ocean liners like the MALOLO, CALIFORNIA, VIRGINIA, PENNSYLVANIA, and SANTA CLARA recently launched. Additional experience along the same lines in still somewhat larger vessels will soon be had in the building of the round-the-world and the transpacific liners.

Nevertheless there are many difficult problems in stepping up to the super liner—to meet and possibly exceed the all around performance of the MAURETANIA which for twenty years held the transatlantic record, and the present holder of the blue ribbon, the BREMEN. It is obvious that in this case haste will surely make waste. Utmost deliberation and care should be exercised in making a thorough investigation of all the factors involved, economic, engineering and artistic. The time and expense should be allowed for making the most painstaking analysis of all features of the leading vessels of this class now in operation and of any subsequent advances of proven merit.

But when all this has been done and competently evaluated, a touch of sound original genius, expressed in the boldness (though not too bold) to suggest and adopt certain new departures which will show an awaiting world that Yankee genius is still to be reckoned with, should be added. And it can be done if those in whose hands lies the initiative, have the capacity to recognize and to avail themselves, without personal bias or prejudice, of the great engineering talent available.

Protecting the Lake Levels

LAST January the Supreme Court rendered a notable decision in favor of the navigational interests of the Great Lakes in the long drawn out controversy with Chicago concerning the abstraction of large quantities of water from Lake Michigan for the purpose of sewage disposal. The text of this decision was published in the February issue of MARINE REVIEW.

Charles Evans Hughes as master for the court was directed to look into the question with the view of making the necessary practical recommendations for a decree, the ultimate purpose of which is to put an end in due course to the abstraction of lake water for such use. He has now made his report in which, with utmost consideration of the existing conditions, a definite plan is outlined for steps to be taken in the construction of sewage treatment plants and controlling works. If this plan is followed it will progressively decrease the abstraction of water so that by Dec. 31, 1938 the diversion will not be more than 1500 cubic feet per second in addition to domestic pumpage. This ultimate amount is amply sufficient for operating the lakes to gulf waterway.

Though at this time the lake levels are unusually high due to a natural cycle, a lowering by artificial means cannot be tolerated. It is generally agreed that the present diversion at Chicago of at least 8500 cubic feet per second is responsible for a six-inch drop in levels. When the lakes are in one of the periods of shallow water this represents a very serious economic loss to the navigational interests and very materially reduces the capacity of the ore and coal carrying fleet at any time.

The ability and character of the special master is so universally recognized that the fairness of his recommendations cannot be questioned. It is therefore likely that the Supreme Court will enter a decree based on his report thus terminating gradually and in due course this unwarranted misuse of natural resources which should be preserved for the benefit of all. With the equitable adjustment of this controversy Canada's rights have also been recognized and protected and it will thus remove a possible obstacle to a mutually satisfactory agreement on the St. Lawrence waterway project.

Shipbuilding in United States

Increase in Construction Due to Orders for Ocean Going Merchant Vessels and Yachts—Smaller Yards Need Work to Operate Normally

By H. G. Smith

ON NOV. 1, 1928, the approximate value of unfinished work on contracts for the construction of merchant vessels was $20,000,000 and of unfinished work on contracts for the construction of naval vessels of $31,900,000. The approximate number of workmen employed in shipyards in the construction of these merchant vessels was 5300 and in the construction of the naval vessels was 5700.

From Nov. 1, 1926, to May 1, 1929, new contracts were made involving the expenditure of $25,300,000, of which $17,900,000 was for the construction of nine sea-going merchant vessels, and $7,400,000 for the construction of 39 vessels of miscellaneous types, such as barges, trawlers, yachts, tugs and carfloats. No contracts for the construction of naval vessels in private shipyards were made during this period.

From May 1, 1929, to Nov. 1, 1929, new contracts were made involving the expenditure of $76,300,000, of which $65,300,000 was for the construction of 25 sea-going merchant vessels and $11,000,000 for the construction of 48 merchant vessels of miscellaneous types.

During this period two contracts for the construction of naval vessels in private shipyards were made involving a contract cost of about $21,000,000.

Present Status of American Shipbuilding

During the year ending Nov. 1, 1929:	
The approximate total contract price for construction of merchant vessels was	$101,600,000
The approximate total contract price for construction of naval vessels was	21,000,000
Grand Total	$122,600,000
Approximate value of contracts for merchant vessels completed during year ending Nov. 1, 1929, including those unfinished on Nov. 1, 1928	$ 28,000,000
Approximate contract price of unfinished merchant vessels on Nov. 1, 1929	$ 93,300,000
Approximate contract price of unfinished naval vessels on Nov. 1, 1929	$ 31,600,000
Approximate number of workmen employed on construction of merchant vessels on Nov. 1, 1929	10,300
Approximate number of workmen employed on construction of naval vessels on Nov. 1, 1929	5,700

This article is a transcript of the letter sent by H. G. Smith, president of the National Council of American Shipbuilders, to the Chamber of Commerce of the United States in response to an inquiry concering the status of the shipbuilding industry in the United States. It is confined to the construction of vessels in shipyards situated on the seaboard.

The increase in construction of merchant vessels during the year ending Nov. 1, 1929, has been confined to ocean-going merchant vessels and yachts and of the merchant vessels the greater number are for foreign trade routes and the increase is due exclusively to the aid accorded ship owners by the mail contract provision of the merchant marine act of 1928 and to the construction loan fund created by the act.

Likewise, the increase during the same period in the construction of yachts in American shipyards is due to the protection accorded domestic shipyards by the 30 per cent ad valorem duty imposed by the tariff act of 1928 on yachts built in foreign shipyards for American owners.

Although business has improved in the large shipyards due to the increase in the construction of ocean going merchant vessels, yet the shipyards equipped for the building of small merchant vessels and miscelaneous crafts, except those engaged in building yachts, have shown no improved business condition and require contracts to enable them to operate normally and increase their working forces.

The unfinished contracts for merchant vessels of all types on Nov. 1, 1929, aggregated approximately $93,300,000. The smaller of these vessels will be completed within a few months while the largest will require two and one-half years or more to complete their construction. The continuation of the employment of workmen in the shipyards is not necessarily reflected by the volume of unfinished contracts on their books, because it is evident, that unless the shipyards secure new contracts, there will be a gradual, but definite, decline in the amount of ship construction to be followed by a corresponding decrease in employment. To maintain a yearly volume of ship construction equal to that now on hand will require contracts to the extent of not less than $75,000,000 per year and the employment of 10,000 additional workmen.

In considering the continuity of employment in a shipyard, one should not lose sight of the period of unemployment of workmen that occurs between the date of signing a contract for the construction of a vessel and the date when actual construction work is commenced thereon. That period, varying from three to nine months depending upon the type of vessel to be constructed, is consumed by the technical staff of the shipyard in preparing plans, ordering materials and equipment and securing their prompt delivery.

Directing attention to naval vessels it is found that the completion of such vessels now in the course of construction will require about 5000 workmen a year during each of the next two years. No prediction at this time can be made concerning the construction of additional naval vessels in private shipyards.

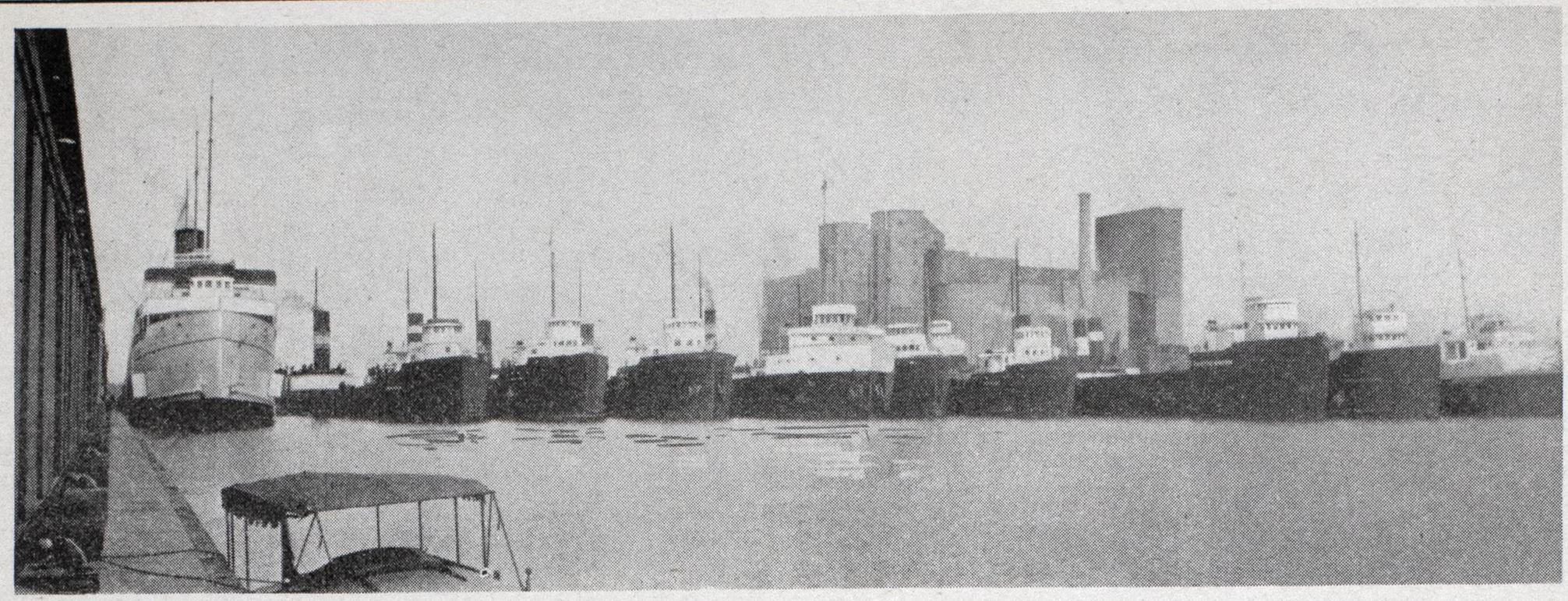
To carry on the construction of the merchant and naval vessels now in progress and of the merchant vessels whose construction is contingent upon favorable action by the postmaster

(*Continued on Page* 62)

Many Additional Men May Be Needed

THE author has pointed out that to maintain a yearly volume of ship construction equal to that now on hand will mean an expenditure of not less than $75,000,000 *per year, and goes on to say:*

"In view of these conditions the shipbuilding companies are seriously interested in the pending applications of shipowners for mail contracts and for loans from the construction loan fund of the shipping board which together with tankers involve construction of not less than fifty-five ocean-going merchant vessels. Reasonable adjustments of these applications on the part of the post office department and shipping board would result in the construction of such vessels at an estimated expenditure of approximately $200,000,000 *over a period of three years. To this amount can be added an estimated expenditure, during the same period, of approximately* $25,000,000 *for miscellaneous crafts that will be constructed without government aid. Thus there would be assured, during a period of three years, an estimated volume of new merchant ship construction which would require the expenditure of not less than* $75,000,000 *a year and the employment of approximately* 26,000 *workmen or about* 10,000 *more than are now employed in the construction of merchant vessels."*



Port of Montreal—Canal Size Grain Freighters Waiting to Discharge Grain from Upper Lake Ports

Extensive Development of Canadian Seaports Is Now Underway

By E. L. Chicanot

PERHAPS the most remarkable feature of Canadian economic progress in the post-war period, at least to attract world-wide attention, has been the Dominion's trade expansion. Steadily increasing domestic activity and prosperity with the aggressive development of foreign markets have resulted in an ever swelling volume of imports of commodities for ready consumption as well as raw materials for manufacture and consistently rising figures of exports of manufactured goods as well as raw products. This revolution in trade standing can be summed up in the fact that the value of Canada's import trade in the past year was 88 per cent greater than it was in 1913 and export trade approximately 270 per cent greater. Whereas in respect of total external trade Canada just prior to the outbreak of the war ranked ninth among the principal trading countries of the world fourteen years later, in 1927, she had come to occupy fifth place being exceeded only by the United States, United Kingdom, Germany and France.

Immigrants for Canada Arriving at Quebec on a British Ship

The effect of this commercial progress is naturally felt in practically every phase of Canadian economic life but in few is it so evident as in the new status of importance Canadian seaports have come to enjoy as year by year they have been called upon to handle an increasing volume of business. Canadian seaports today have a much higher standing internationally than they had before the war, this rise in world significance and importance corresponding to Canada's ascension among the trading countries of the world. Montreal in its total of business handled has come to rank second only to New York among American ports and sixth after London, New York, Liverpool, Hamburg, and Antwerp among all ports the world over, this despite the fact that it has only an eight months' open season. Vancouver now claims to be the first seaport on the North Pacific, with a place ahead of Seattle, San Francisco, and Los Angeles. This merely gives some indication of what has been happening in the years since the conclusion of the war.

All Canadian ports handling seaborne traffic have shared in the increasing business in the post-war pe-

riod, and what in general has been taking place may be briefly summarized in a comparison of the values of import and export trade in 1913 and 1929 at Canada's five principal seaports.

		1913	1929
Montreal	Imports	$145,629,791	$245,517,953
	Exports	73,157,247	234,267,995
Vancouver	Imports	$ 43,475,412	$ 77,582,326
	Exports	91,992,554	180,927,521
Saint John	Imports	$ 9,845,221	$ 15,691,713
	Exports	25,241,268	55,250,531
Halifax	Imports	$ 12,196,236	$ 22,487,801
	Exports	14,747,427	41,747,024
Quebec	Imports	$ 14,719,547	$ 17,567,179
	Exports	8,069,656	21,976,328

Trade Is Growing Rapidly

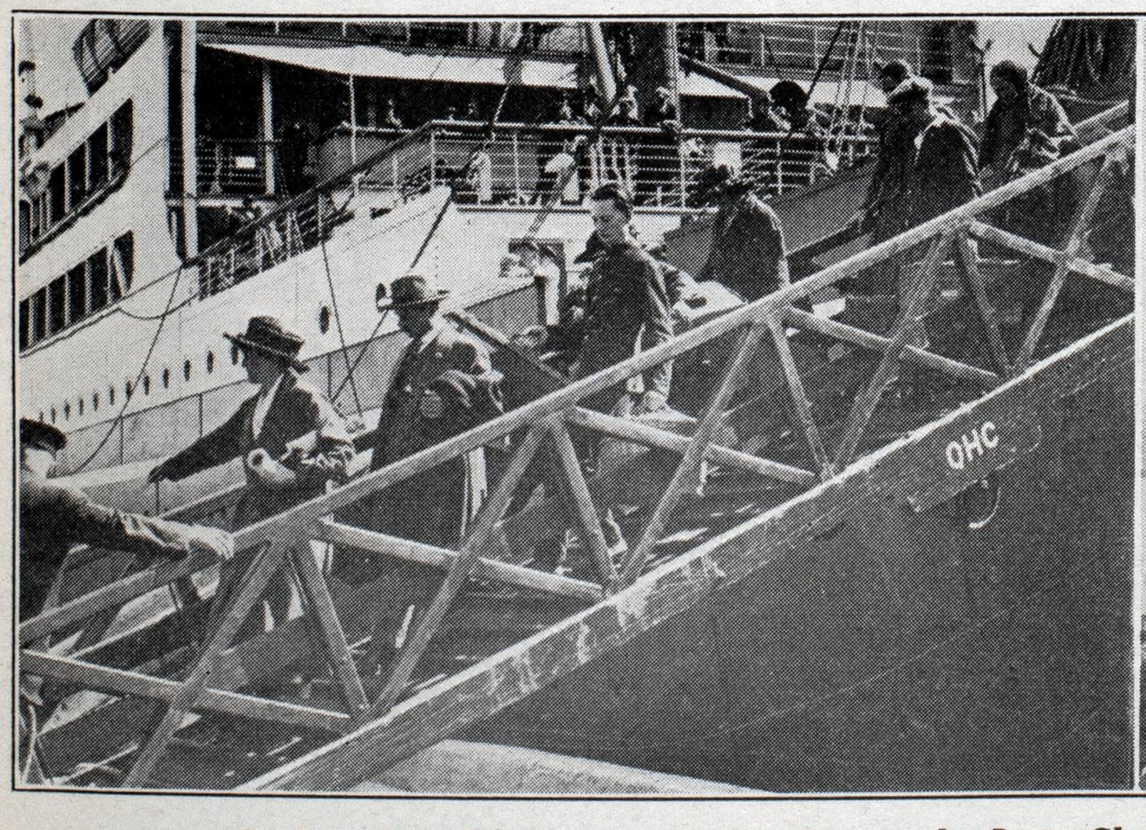
In practically all cases the rate of progress exceeded anything anticipated or for which provision was made so that the years since the war constituted a period of ceaseless activity in an effort to provide facilities adequate to new requirements. Canada's principal seaports today present a different appearance from what they did during the war and their efficiency has gone up by a marked degree. The significant fact today is that such progress is continuing at an unabated rate in every section and plans are being carried out at the present time which surpass anything undertaken in the past. Last year all ports, practically without exception, set up new records of business, their facilities being taxed to the utmost in many cases, and as there is every prospect of the volume of Canadian trade continuing to go steadily up unparalleled activity prevails at Canadian ports in preparing for this by adding to capacities and facilities. The next few years will bring yet more drastic changes in the appearance and standing of Canada's seaports.

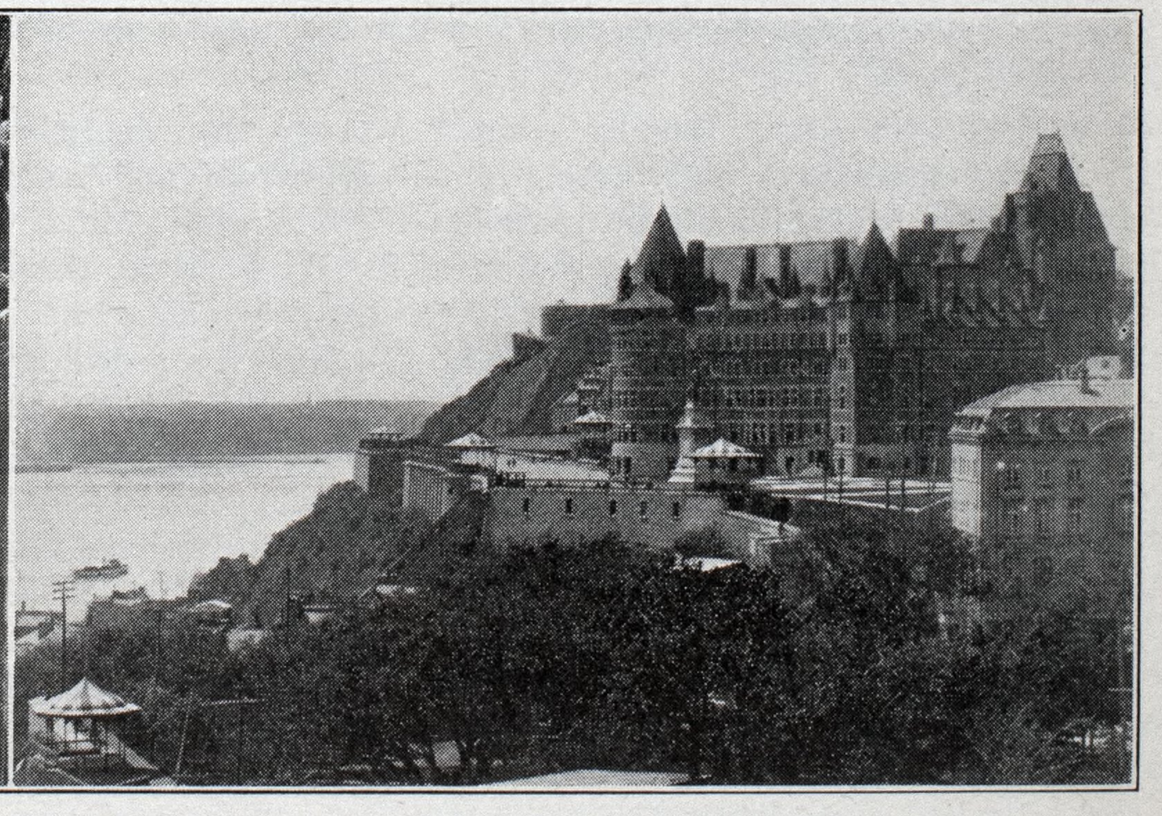
Expenditures upon Canada's seaports have loomed up very importantly in the government's estimates of late years. As recently as 1928 parliament voted a total of $14,000,000 for harbor commissions in the east, of which $8,500,000 was for Quebec; $5,000,000 for Saint John; and $500,000 for Halifax. Some of this is still being expended upon programs of improvement and enlargement. At the last session of the house a further $27,000,000 was voted, of which $8,000,000 is for Vancouver; $10,000,000 for Montreal; $5,000,000 for Halifax; $2,000,000 for Three Rivers; and $2,000,000 for Chicoutimi. This last port two years ago received $2,000,000 for port improvement. Programs have already been drawn up for the expenditure of these moneys and in the next few years Canada's leading seaports will undergo yet further developments though it is clear this is by no means the end, and year by year fresh appropriations will have to be made to provide for the handling of an expanding commerce.

Today the port of Montreal in all respects compels world attention and it is ceaselessly expanding as the volume of its business goes up by marked increments year by year. In 1928 fresh records were set up in practically every direction. For the first time the port attained and passed by a wide margin the 200,000,000 bushel figure in grain handling. Further records are indicated in the present year and additional grain storage is being prepared for this. New heights were similarly scaled in passenger handlings, the increasing popularity of the St. Lawrence route being pronounced over several years. A yet enhanced prestige in this regard is foreshadowed in a substantial new tonnage planned for the Montreal route in the immediate future. As the Dominion's leading port Montreal is naturally securing the major share of the benefits accruing from the increased volume of general commodities to leave the country.

At the great St. Lawrence port the most ambitious program of expansion undertaken for years is being actively prosecuted. Prior to the opening of the 1930 season the whole aspect of

Vancouver, B. C., Next to Montreal the Greatest Port in Canada—Loading Flour





Quebec, Canada—Immigrants Landing at the Port—Chateau Frontenac Mecca of American and World Travelers

the east end of the harbor will be changed with the creation of the nucleus of new harbor equipment, including the construction of three new piers, larger than any of the existing ones, shed construction and a bridge. Two million dollars is to be spent on three new shipping berths; $2,000,000 on the reconstruction and extension of two wharves; $2,000,000 for the extension of the electric railway facilities in the harbor limits; and $4,000,000 for the extension of grain conveyor systems, berthing facilities, and other improvements. Despite competitive developments elsewhere Montreal's grain traffic looms up more important. New elevator construction at the port in 1928 raised its capacity to 15,000,000 bushels, and further additions are planned.

Quebec has rapidly taken on a new importance in the handling of general traffic and faces more active times. Quebec long entertained a grievance over its position as a port. Save for possessing the immigration terminals where all newcomers from Europe landed as well as being the point of embarkation and debarkation for all passengers on the larger transatlantic liners which cannot proceed up the river to Montreal it had to depend largely upon any overflow of business which could not be handled at the greater gulf port. It ceaselessly sought a greater share of the handling of general Canadian business and agitated for a revision of the railway tariff which it felt discriminated against it. This was remedied in the fall of 1927 when the board of railway commissioners accorded Quebec the same rates on grain for export from the Georgian Bay ports as to Montreal and on all traffic from Toronto and points west for export.

As a result there is a very different future ahead of Quebec. The 1926 season recorded an increase of 27 per cent in import and 42 per cent in export trade at the port over the previous year, which was followed up in the following year by an improvement of 10 per cent in both imports and exports. In 1928 while imports showed a slight decline the value of exports went up some 50 per cent. In 1928 Quebec handled 11,063,761 bushels of grain, whereas in 1920 only 884,450 bushels were handled. The port now has an elevator capacity of 4,000,000 bushels, 2,000,000 bushels being added last year, with marine towers, conveyors, and grain galleries. For perishable traffic a cold storage warehouse has been provided, the main building having a capacity of 500,000 cubic feet and a fish house thoroughly equipped for the freezing of fish with a capacity of 1,000,000 pounds. At the same time in 1928 new berthing facilities and the erection of a new landing stage were completed. The program of expansion under way will by the fall of 1930 provide four berths for the largest types of passenger vessels, two additional berths for large sized freight ocean steamers, and two berths for canal sized vessels carrying grain.

With the nationalization of the Atlantic ports of Saint John and Halifax a new era of greater activity opened up for them and their harbor commissioners have exhibited great energy in achieving new development and preparing the ports for the increase in traffic brought to them.

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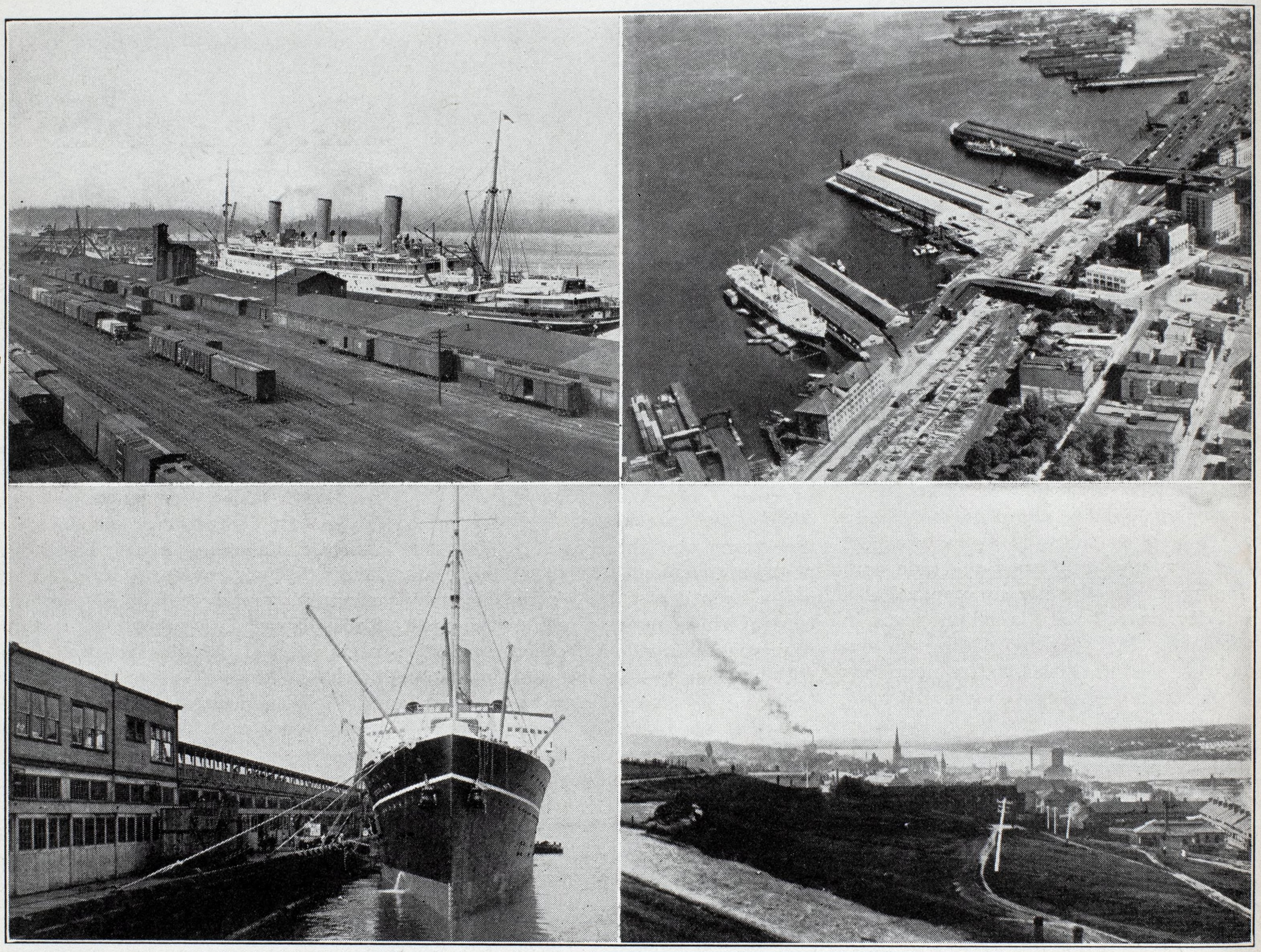


UPPER LEFT—EMPRESS OF AUSTRALIA IN HARBOR OF VANCOUVER, B. C. UPPER RIGHT—AIRPLANE VIEW OF VANCOUVER HARBOR. LOWER LEFT—PASSENGER LINER AT QUEBEC. LOWER RIGHT—HARBOR OF HALIFAX, N. S.

World Cruise Ship Is Followed by Radio

For the first time in history, the radio facilities of the war department followed a transport around the world. The cableship DELLWOOD on its trip from Seattle, Wash. to Manila, P. I., by way of the Panama and Suez canals, was in daily contact with the army radio station WAR, Washington, D. C. Regarding this remarkable performance, the war department stated:

"On Nov. 18, 1929, the signal corps cable-ship DELLWOOD arrived at Manila. It is interesting to know that during the entire voyage of this transport from Seattle, Wash., down the Pacific coast, through the Panama canal, across the Atlantic Ocean, through the Mediterranean Sea, Red Sea, Indian Ocean, past the Straits Settlements and into the China Sea to Manila, the cable-ship was in daily contact with Army radio stations WAR, Washington, D. C., and WTA, Manila, P. I. This is the first time in the history of the war department that a transport has been followed around the world by war department radio facilities. The DELLWOOD is equipped with a BC 147 transmitter. This is a 500-watt transmitter of signal corps design. The daily contacts were made on a frequency of 8.510 kilocycles."

Extend Yard Equipment

In anticipation of additional shipbuilding facilities being needed to meet the expected demand for new ship construction, the Federal Shipbuilding & Dry Dock Co., Kearny, N. J., subsidiary of United States Steel Corp., has commenced rebuilding two of its shipways so as to permit construction of larger ships than could heretofore be handled. These increased facilities will be available by April 1, and together with the new ships already under construction will require the employment of several hundred men.

Division of Endowment

At the annual meeting of the Society of Naval Architects, held Nov. 14 and 15, 1929, Homer L. Ferguson, president of the society, made an announcement that the following division of the endowment fund income had been recommended and approved:

(1) That all income be added to principal until the par value of securities held amounts to $1,000,000 and that thereafter $1500 annually be added to the principal.

(2) That $1000 be made available for an advanced scholarship in naval architecture or marine engineering in any year where an outstanding candidate is presented for this award, or to pay for advanced or research work in line of his profession by an outstanding naval architect or marine engineer.

(3) That $500 be appropriated annually for special cash prizes. These only to be given when a paper, a design or some other accomplishment of a member of this society in the line of his profession is of outstanding and unusual importance.

(4) That the balance of income be made available for special extraordinary uses, such as an index of the society's Proceedings, or contribution to the Engineering Foundation for special research, etc.

(5) That an unused portion of the amounts set aside under proposals (2), (3) and (4) shall be carried forward from year to year, each in a separate fund, for future use for the purposes described and that such unused balances shall not revert to the principal of the Endowment Fund.

J. W. Powell, C. A. McAllister and W. M. McFarland were appointed a committee to carry out the provisions of the above recommendations.

New Merchant Fleet Head

John R. Gordon of New York, on Dec. 18 was selected by the United States shipping board to be president of the Merchant Fleet Corp. The selection of Mr. Gordon was made after T. V. O'Connor, chairman of the board, had asked to be relieved of his duties as president of the Fleet corporation. He was formerly with the Union Sulphur Co., marine department.

Analyze Shipping Needs

THE Chamber of Commerce of the United States, Washington, under date Dec. 7, issued a booklet on *Business Conditions and Outlook* containing a summary of reports submitted to the National Business Survey Conference. Among the many interesting articles submitted are three of particular moment to the shipping industry, one dealing with *Shipbuilding* by Homer L. Ferguson, president of the Newport News Shipbuilding & Dry Dock Co., another on *Shipping* by H. B. Walker, president American Steamship Owners association, and a third on *Ship Construction* by H. G. Smith, president National Council of American Shipbuilders, as follows:

Shipbuilding—by Homer L. Ferguson

The shipyards of the country can handle 50 per cent more than they are handling in 1929, without straining their facilities.

The only way we can see to get additional ships to build is to build up a merchant marine for the foreign trade. To turn out 10 ships a year for the foreign trade at an average cost of $5,000,000 each will give employment to nearly 300,000 people in building the ships, besides the additional employment involved in manning the vessels and in producing the additional goods they will transport.

This latter item, in my opinion, is of great moment, as I can think of no better method of fostering foreign trade than to have American steamships giving a dependable service to all the seaports of the world, with the affiliations in foreign countries which will develop as a result.

What is wanted is a continued steady flow of new orders. These can be obtained only by the development of paying and prosperous steamship lines. The friends of an American merchant marine should be careful not to err on the side of too much enthusiasm and attempt to have a merchant marine build up faster than it can be financed and operated sucessfully.

Shipping—by H. B. Walker. There has been a general reduction in the volume of cargo and number of passengers carried inward and outward in our foreign trade and also in our coastwise and intercoastal trade. This is partly seasonal.

Nothing has developed, however, which makes American shipping interests feel that there is anything radically wrong with the basic conditions of industry, or that the present condition is other than temporary, provided that the decline is checked through the restoration of public confidence. They believe that the situation is largely psychological, and that with the readjustment always incident to change, conditions will again become stabilized.

Impetus would be given improvement in the shipping industry if the executive department of the government would proceed to carry out the letter and spirit of the Jones-White Acts as rapidly as possible, and if the shipping board would forthwith dispose of the balance of its government-operated services.

Mail Contracts Require New Ships

Twenty-five Mail Contracts Awarded—Means Payment of $13,072,425 Annually—Fifty Ships Must Be Built as Specified

Ocean Mail Contracts Awarded to American Steamship Lines to Dec. 11, 1929

Route Number	Steamship Cos. & Termini	Class of Vessels Required at Start of Service	Annual Rate of Payment	Class of Vessels Required to be Substituted
4	**Munson Steamship Lines** New York to Buenos Aires	Class 3—18 knots—12,000 tons	$1,247,584.00	None
5	**Export Steamship Corp.** New York to Mediterranean and Black Sea Ports	Class 6—10 knots—4,000 tons	1,809,165.00	Six vessels of Class 5—13 knots—Ordered from New York Shipbuilding Co. Two to be laid down now, remaining two to follow on same ways.
6	**American South African Line** New York to Beira, Portuguese E. Africa	Class 6—10 knots—5,000 tons	248,280.00	One new vessel of Class 5—13 knots—6,000 tons within two years and one additional after fifth year—First vessel, with diesel engines now under way by Sun S.B.& D.D. Co.
8	**Grace Steamship Company** New York to Valparaiso	Two of Class 4—16 knots Others of Class 5—13 knots	684,756.00	One new vessel of Class 4 within one year and one additional new vessel of same class within three years after award of contract—First vessel ordered from New York Shipbuilding Co.
10	**New York & Porto Rico SS Co.** San Juan to Santo Domingo City	Class 5—13 knots—8,000 tons	46,176.00	None
15	**Eastern Steamship Lines** Boston to Yarmouth	Class 3—19 knots—5,000 tons	225,624.00	None
16	**American Scantic Line** New York to Copenhagen	Class 6—10 knots—4,000 tons	538,800.00	Eight vessels of Class 6, 12 knots—4,800 tons, two within 15 months from award of contract; one additional within the succeeding 15 months and one additional each 18 months thereafter.
17	**American West African Line** New York to West African Ports	Class 6—10 knots—4,500 tons	286,650.00	Three vessels of Class 5—14 knots—4,000 tons. One within the fourth year from the award of contract and two during remainder of the contract.
18	**Atlantic & Caribbean Steam Navigation Co.** New York to Maracaibo	Two of Class 5—13 knots Others of Class 6—10 knots	372,419.00	After completion of the third year of the contract, one additional vessel of Class 5—13 knots—3,000 tons.
20	**New York & Cuba Mail SS Co.** New York to Havana	Class 4—16 knots—6,000 tons	370,032.00	Two new vessels of Class 3—18 knots. These two vessels turbine electric drive have been ordered from the Newport News Shipbuilding & Dry Dock Co.
21	**New York & Cuba Mail SS Co.** New York to Progreso	Class 5—14 knots—4,500 tons	419,536.00	One vessel of Class 5—15 knots—6,000 tons within three years from the award of the contract.
23	**Lykes Bros. Steamship Co.** Galveston to Santo Domingo	Class 6—10 knots	241,215.00	One vessel of Class 5—13 knots—4,000 tons within 4 years from award of contract.
22	**Gulf Mail Steamship Co.** New Orleans to Pregreso, Mexico	Class 6—10 knots—3,000 tons	23,619.00	One Class 5—13 knots in 3 years.
24	**The Oceanic Steamship Co.** San Francisco to Sydney	Class 4—16 knots—4,000 tons	692,886.00	Two new vessels of Class 3—18 knots. Three new vessels 585 feet in length, 18 knots speed to cost $7,000,000 each ordered from the Bethlehem S. B. Corp.
25	**Dollar Steamship Line** San Francisco to Manila	Class 3—18 knots—12,000 tons	1,262,664.00	None
26	**Admiral Oriental Line** Seattle to Manila	Class 3—18 knots—12,000 tons	1,070,784.00	None
27	**Dollar Steamship Line** San Francisco to Colombo	Class 5—14 knots—10,000 tons	1,141,296.00	Four new vessels of Class 3—18 knots, 12,000 tons. Six new vessels, 653 feet in length, turbine electric machinery 21 knots, said to have been ordered, four from the Newport News Shipbuilding & Dry Dock Co. and two from the New York Shipbuilding Co. Terms of contract one within three years and one each successive two years thereafter.
28	**States Steamship Company** Portland to Manila	Class 6—10 knots—4,000 tons	399,540.00	Two vessels of Class 5—14 knots—4,000 tons. One during the 4th year of the contract and one during remainder of contract.
29	**States Steamship Company** Portland to Dairen, China	Class 6—10 knots—4,000 tons	184,440.00	One, of Class 5—14 knots—4,000 tons.
30	**Oceanic & Oriental Nav. Co.** Los Angeles to Auckland	Class 6—10 knots—4,000 tons	169,740.00	None
31	**Oceanic & Oriental Nav. Co.** Los Angeles to Melbourne	Class 6—10 knots—4,000 tons	210,960.00	None
32	**American Line Steamship Corp. (Panama Pacific Line)** New York to Balboa, Canal Zone	Class 5—13 knots—7,500 tons	402,400.00	3 vessels of Class 3—18 knots, not less than 12,000 tons, not more than 3 years from beginning of contract term.
33	**South Atlantic SS Co. of Del.** Savannah, Ga., via Brest to Liverpool; Savannah, Ga., via Plymouth to Bremen	Class 6—10 knots—4,900 tons	367,657.00	3 vessels of Class 6—12 knots—3,000 tons; one during 4th year; one during 7th year; one during 9th year.
34	**Pacific Argentine Brazil Line** San Francisco and Los Angeles via Bahia Blanca to Buenos Aires	Class 6—10 knots—4,000 tons	308,523.00	Additional vessels of Class 6 to provide 18 trips per annum, not later than third year of contract.
36	**Tacoma Oriental Nav. Co.** Tacoma to Taku Bar Tacoma to Manila	Class 6—10 knots—4,500 tons	347,679.00	One vessel of Class 5—13 knots—5,000 tons during 5th year of the contract and one additional vessel of Class 5 at such time as the PM. G. and the contractor may mutually agree may best serve the route.

Note: The aggregate annual sum in mail contracts up to Dec. 11, 1929 as per the above table is $13,072,425.

Large Ship Construction Program Called for in New Proposals

By Lynne M. Lamm

IT WOULD appear from activities now in progress at the nation's capital that it will not be long before the question of ocean mail contracts which has caused considerable controversy for sometime, will be adjusted. This is being done in part at least through the activities of the interdepartmental mail contract committee which was appointed by President Hoover shortly after he came into office. This committee consists of Secretary of Commerce Lamont, chairman; Postmaster General Brown; Secretary of the Navy Adams; and Chairman O'Connor of the United States shipping board.

This committee was appointed by the President because the postmaster general believed that he should have the advice of other government departments who are interested in ocean mail contracts and shipping generally.

The latest development at the time this is being written is the announcement that 29 additional vessels will be constructed within 5 years to cost in the neighborhood of $175,000,000 by which the ocean mail service of this country will be expanded. Such a proposition now has the endorsement of the interdepartmental committee. It is estimated that to carry out this program by entering into mail contracts on a mileage basis the post office department will expend annually about $5,500,000 more than it is doing now on a poundage basis.

As a matter of fact considerable interest has been aroused in government circles over the whole situation, so much so that President Hoover in his annual address to congress when the new session convened early in December made special mention, not only of the merchant marine, but of the ocean mail problem. In this connection he said in part:

"Desirous of securing the full values to the nation of the great effort to develop our merchant marine by the merchant marine act soon after the inauguration of the present administration, I appointed an interdepartmental committee, consisting of the secretary of commerce, as chairman, the secretary of the navy, the postmaster general, and the chairman of the shipping board, to make a survey of the policies being pursued under the act of 1928 in respect of mail contracts; to inquire into its workings and to advise the postmaster general in the administration of the act.

"In particular it seemed to me necessary to determine if the result of the contracts already let would assure the purpose expressed in the act, 'to further develop an American merchant marine, to assure its permanence in the transportation of the foreign

Proposed Mail Contracts and Requirements

Twenty-five Vessels of 280,000 Tons at an Estimated Cost of $141,000,000 Must be Built as Specified Below

Service	Class of Vessels at Start of Service	Annual Payments	Class of Vessels Required in Due Course
New York to Cherbourg & Southampton Weekly—5 days each way	One or more Class 2 Vessels	Not Settled	Two Class 1 ships of not less than 28 knots and 45,000 tons at approximate cost of $60,000,000, within 4 years.
New York to Plymouth Cherbourg and Hamburg Weekly—7½ days each way	Nine and one-half days	do	Two Class 2 ships of not less than 20 knots and 20,000 tons, at approximate cost of $16,000,000, within not more than 5 years.
New York to Plymouth Weekly—7½ days each way	Eight and one-half to nine days	do	None
New York to Valparaiso Grace Steamship Lines Weekly—19 days each way	Twenty days	do	One Class 3 ship of not more than 18 knots and 10,000 tons, at approximate cost of $4,000,000, to be built within three years.
Tacoma to Valparaiso North Pacific Lines Bi-Weekly service	Not stated	do	One Class 3 ship of not more than 18 knots, and 8,000 tons at approximate cost of $4,000,000, to be built within three years.
San Francisco to Puerto, Colombia, Panama Mail Weekly—21 days	Not stated	do	Two Class 3 ships of not less than 18 knots and 8,000 tons, at approximate cost of $8,000,000, to be built within three years.
Baltimore to Hamburg Weekly—12 days	Not stated	do	For operation by five new or reconstructed ships of not less than 16 knots, costing not less than $7,500,000 and for construction within six years of two Class 3 ships, of not less than 18 knots and 12,000 tons, at approximate cost of $8,000,000.
New York to Limon Weekly—10 days	Twelve days	do	Three Class 4 ships of not less than 16 knots and 7,000 tons, at approximate cost of $9,000,000, within three years.
New Orleans to Puerto, Colombia Weekly—4 days	Six days	do	Two Class 4 ships of not less than 16 knots and 5,000 tons, at approximate cost of $6,000,000.
San Francisco to Corinto Bi-weekly—7 days	Ten days	do	Three Class 4 ships of not less than 16 knots and 5,000 tons, at approximate cost of $9,000,000, to be built within three years.
New York to Puerto, Colombia Weekly—5 days	Nine days	do	Three Class 4 ships of not less than 16 knots and 7,000 tons at approximate cost of $9,000,000, to be built within three years.
New Orleans to Bahia Blanca Bi-weekly—18 days	Twenty-five days	do	Two Class 5 ships of not less than 13 knots and 7,000 tons, at approximate cost of $40,00,000, within five years.
New Orleans to Spanish and Portuguese ports Twenty ships yearly—14 days	Eighteen trips yearly with eighteen day service	do	Two Class 5 ships of 5,000 tons, at approximate cost of $4,000,000, within five years.

trade of the United States, and for other purpose, and to develop a coordinated policy by which these purposes may be translated in actualities.

"That study has now been substantially completed and the committee has advised the desirability and the necessity of securing much larger undertakings as to service and new construction in future contracts. The committee at this time is recommending the advertising of 14 additional routes, making substantial requirements for the construction of new vessels during the life of each contract recommended. A total of 40 new vessels will be required under the contracts proposed, about half of which will be required to be built during the next three years. The capital cost of this new construction will be approximately $250,000,000, involving approximately 460,000 gross tons. Should bidders be found who will make these undertakings, it will be necessary to recommend to congress an increase in the authorized expenditures by the post office department of about $5,500,000 annually. It will be most advantageous to grant such an authority.

"A conflict as to the administration of this act has arisen in the contention of persons who have purchased shipping board vessels that they are entitled to mail contracts irrespective of whether they are the lowest bidders, the post office, on the other hand, being required by law to let contracts in that manner. It is urgent that congress should clarify this situation.

On Amending the Jones-White Law

Since the President sent his message to congress, however, his committee has announced that about $175,000,000 and not $250,000,000 will be spent on new construction at this time. It is possible that more will be spent at some later date.

In connection with the announcement of the building program by the Interdepartmental committee it was stated that of the 29 vessels to be built, four will be of a swift modern type. They will go into the North Atlantic traffic. Twenty-seven of the vessels will be used on 13 existing ocean routes and the other two will be used for a route to the Black Sea.

Following the agreement of the committee on the building program it was stated that two new vessels of the modern fast type will be used for the route from New York to Southampton. They are to be 45,000 tons gross and of 28 knots speed and are to be placed in service within four years.

There is still considerable speculation in congress as to whether or not it would be advisable to amend the Jones-White law of 1928. As stated in the message of President Hoover there is contention on the part of some that when ships are purchased from the United States shipping board that the same lines should be favored in the award of mail contracts. Some, it is reported, have even indicated, that they purchased the ships because of the belief that this was or would be the government policy. On the other hand it is contended by others that the law is very plain that the contracts are to be awarded to the "lowest bidders."

It is known that an amendment has been prepared for introduction in congress but whether it will actually ever be placed before that body is merely a matter of conjecture. Some of the congressmen who had had most to do with shipping legislation during the past few years are of the opinion that the Jones-White act is clear now and does not have to be amended for purposes of "clarification."

It will be recalled that the Jones-White act had five major provisions. First, it reaffirmed the merchant marine act of 1920. Second, it provided for the sale of vessels by the shipping board. Third, it provided a construction loan of $250,000,000 for the building of ships by American companies. Fourth, it provided for ocean mail contracts for carrying the mails at a mileage instead of on a poundage basis. Fifth, it provided an insurance section. It also had other minor provisions. Of all of these, the section dealing with ocean mail contracts has proven to be of the greatest importance.

The mail contracts, under the law, were to be awarded by the post office department, which, however, had to certify to the shipping board essential routes while the board had to certify to the post office department types of vessels to be built. The post office department was to advertise for the bids and the contract to be let to the lowest bidder. The whole purpose of the act was to maintain adequate merchant marine under private ownership.

As previously stated, the matter of the ocean mail contracts was not proceeding as smoothly as had been hoped with the result that Mr. Hoover, immediately upon becoming President, named the committee. This committee has working under it a subcommittee which makes recommendations to the parent committee. The subcommittee consists of experts in the departments, whose heads represent it on the Presidential committee.

It is expected that probably before this paper reaches its readers that the post office department will have sent out bids for the new routes, with the prospect that they will be opened Feb. 15 or thereabouts.

Shipbuilding Prospects Are Steadily Improving

THE table appearing opposite the preceding page lists all mail contracts awarded up to Dec. 11, 1929 *by the post office department to American steamship companies engaged in foreign service. Twenty-five lines now receive in annual payments an aggregate of* $13,072,425. *This substantial aid is due to the provisions of the merchant marine act of* 1928. *Under terms of these contracts* 50 *new vessels must be provided in due course. A tentative estimate places the construction cost of these vessels at over* $100,000,000. *Of this program two vessels have already been launched and* 10 *others have been contracted for in various shipyards, leaving* 38 *to be undertaken within the time specified in the contracts.*

But in addition to this the post office department has now issued proposals for mail services on 13 *other routes including the important transatlantic lines. Bids will shortly be received and, if satisfactory, mail contracts will be awarded. The new vessel construction involved in the proposed contracts will include two super liners of not less than* 45,000 *tons each and a speed of* 28 *knots at an estimated cost of* $30,000,000 *apiece. Under the terms of the new proposals* 25 *vessels of* 280,000 *gross tons at an estimated cost of* $141,000,000 *must be built within three to eight years.*

—Editor's Note.

New Car Ferry Service

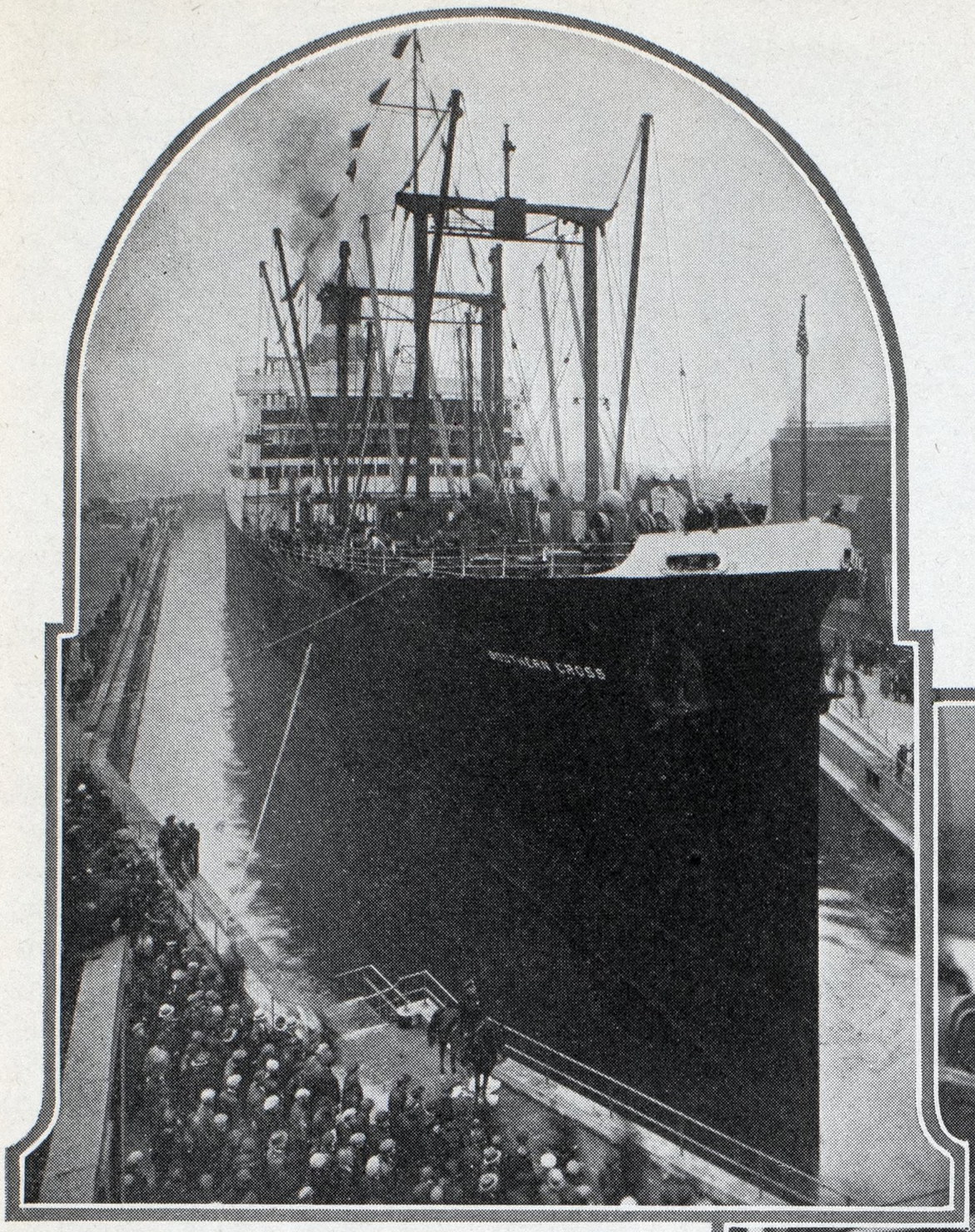
General Manager C. W. Brosius has been authorized by the board of commissioners of the port of New Orleans to investigate and report on the proposal of the Florida East Coast Car Ferry Co. to establish a car-ferry service between New Orleans and Havana. Request has been made for a location on the inner harbor navigation canal, and the company has indicated that it is anxious to secure terminal facilities and inaugurate the service as soon as possible. It is anticipated that the required terminal will cost approximately $100,000.

There is already in operation between New Orleans and Havana the car-ferry SEATRAIN of the Overseas railway in addition to several regular steamship lines which carry passengers and freight between New Orleans and Cuban ports.

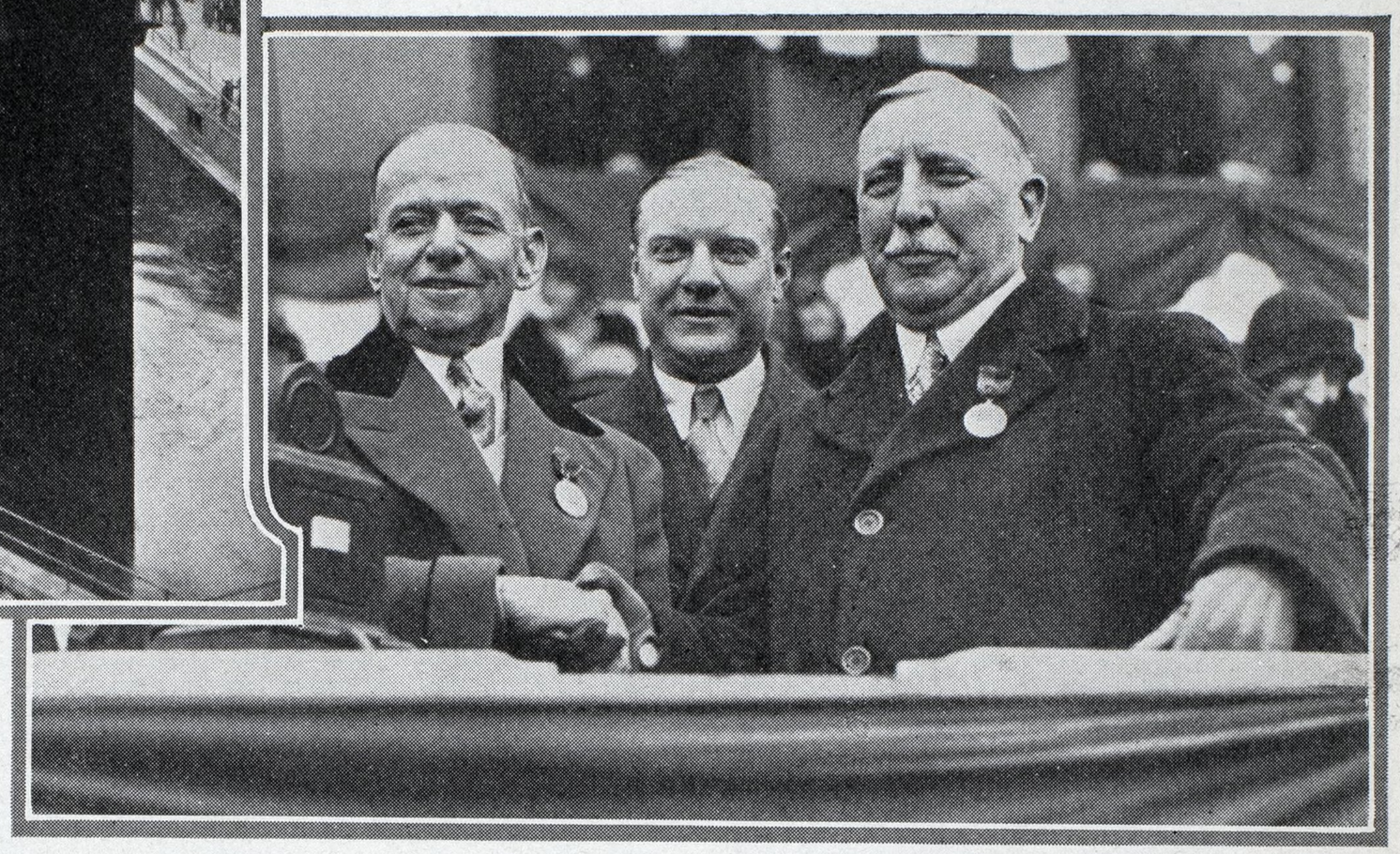
Largest Dry Dock in Port of New York

Opened for Service

By E. C. Kreutzberg



Largest Private Modern Dry Dock on the Atlantic Seaboard Receives the S. S. Southern Cross of the Munson Lines at the Official Opening of the Dock Dec. 7, 1929 at the Robins Plant, Brooklyn, N. Y., of the Todd Shipyards Corp.



Left to Right—William H. Todd, President of the Todd Shipyards Corp.; Frank J. Taylor, Commissioner of Records, and James J. Byrne, Borough President of Brooklyn, N. Y., on Speaker's Stand at the Opening of the New Dock

ON SATURDAY, Dec. 7, William H. Todd, president of Todd Shipyards Corp., saw a long cherished dream become a reality. In the presence of the company's officers and thousands of its employes, and of a large group of distinguished guests, he saw placed in service the mammoth new graving dock, at the Robins plant at Erie Basin, Brooklyn, N. Y. On that occasion the dock was flooded and the Munson liner SOUTHERN CROSS eased over the keel blocks. In less than two hours this vessel, the first to be placed in the new dock, was ready for inspection. A gala event for New York harbor, the Todd orchestra rendered a concert, thousands of whistles and horns along the waterfront made the welkin ring and speeches by Mr. Todd and others were broadcast by radio. Chester Kellogg, vice president of the Munson Steamship Lines represented the steamship owners.

Admiral Frederic R. Harris, U. S. N. retired, Consulting Engineer, who designed and managed the construction of the new dry dock, was born in 1875 and is a graduate of Stevens Institute of Technology. He designed and built the largest dry dock at the Brooklyn Navy Yard as well as many other masonry dry docks for the navy. This is his fourteenth masonry dock

This celebration properly marked an event of deep significance to the tremendous shipping activities to the port of New York. It marked the inauguration of the largest graving dock in the port of New York and the largest privately owned graving dock on the north Atlantic seaboard. With this dock available in New York, it will be unneccessary for large ships like the GEORGE WASHINGTON to go to other ports in search of adequate docking facilities. In connection with the celebration much comment was heard concerning the courage and enterprise of the Todd Shipyards Corp. in undertaking this great construction project and bringing it to a conclusion. The dock entailed an expenditure of substantially $3,000,000 which, after all, still is a large sum of money. And all of this money came out of the treasury of the Todd company, which did not get one cent, in the form of subsidy or otherwise, toward the cost of the dock. One feature of interest in connection with this investment was that the dock was built in a period of 18 months, thus placing it in an earning position much sooner than the usual structure of this character. As is well known in marine circles, the

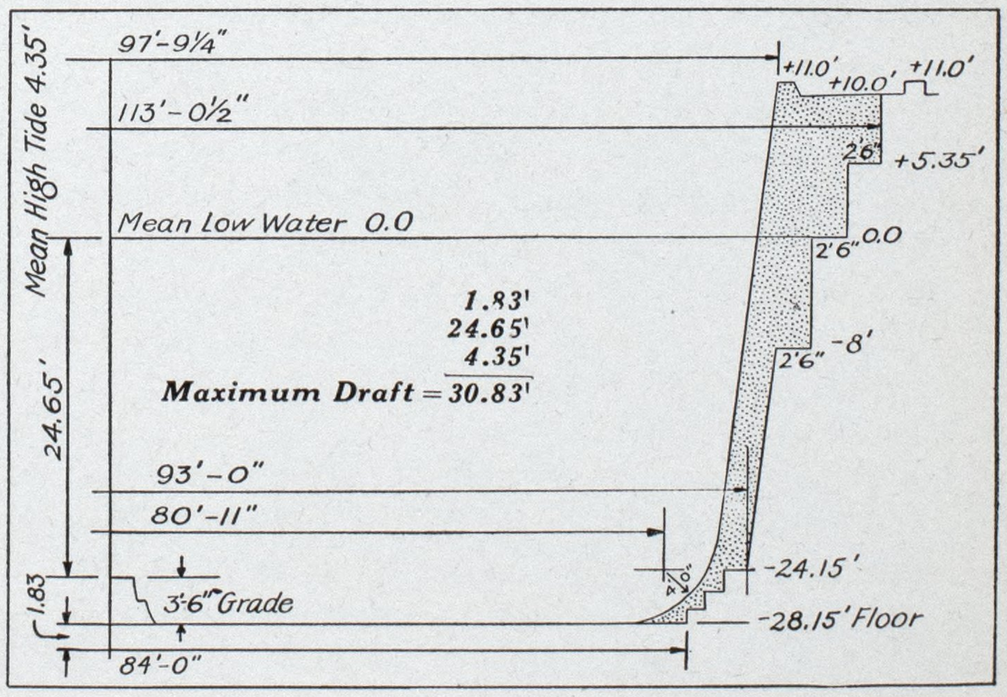
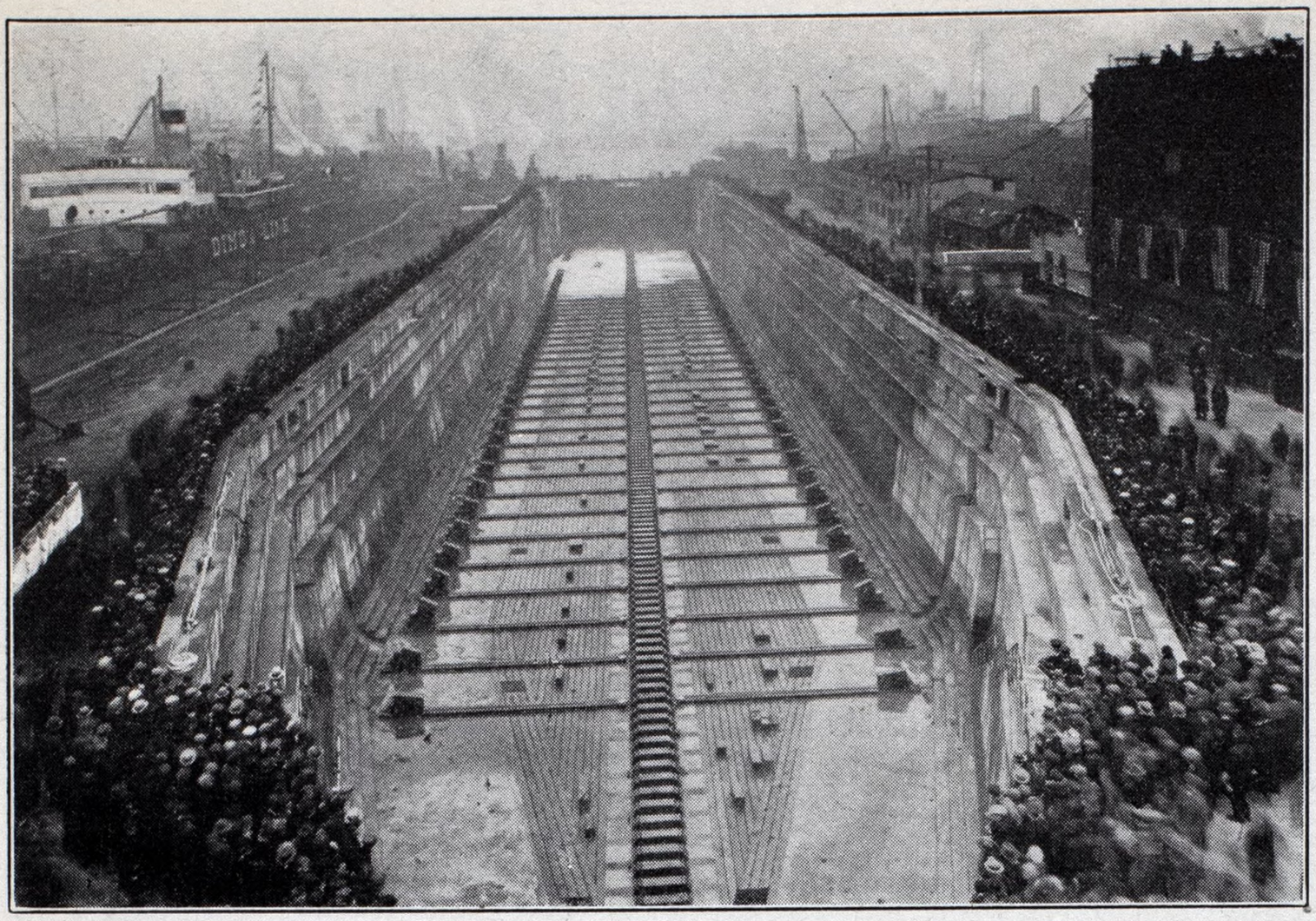


Diagram showing the width and the depth of the new Dock. The maximum permissible draft at normal High Tide is 30 feet 10 inches



New Huge Graving Dry Dock at Robins Plant, Todd Shipyards Corp., Brooklyn, N. Y. Starting to Flood Dock for Official Opening, Dec. 7, 1929

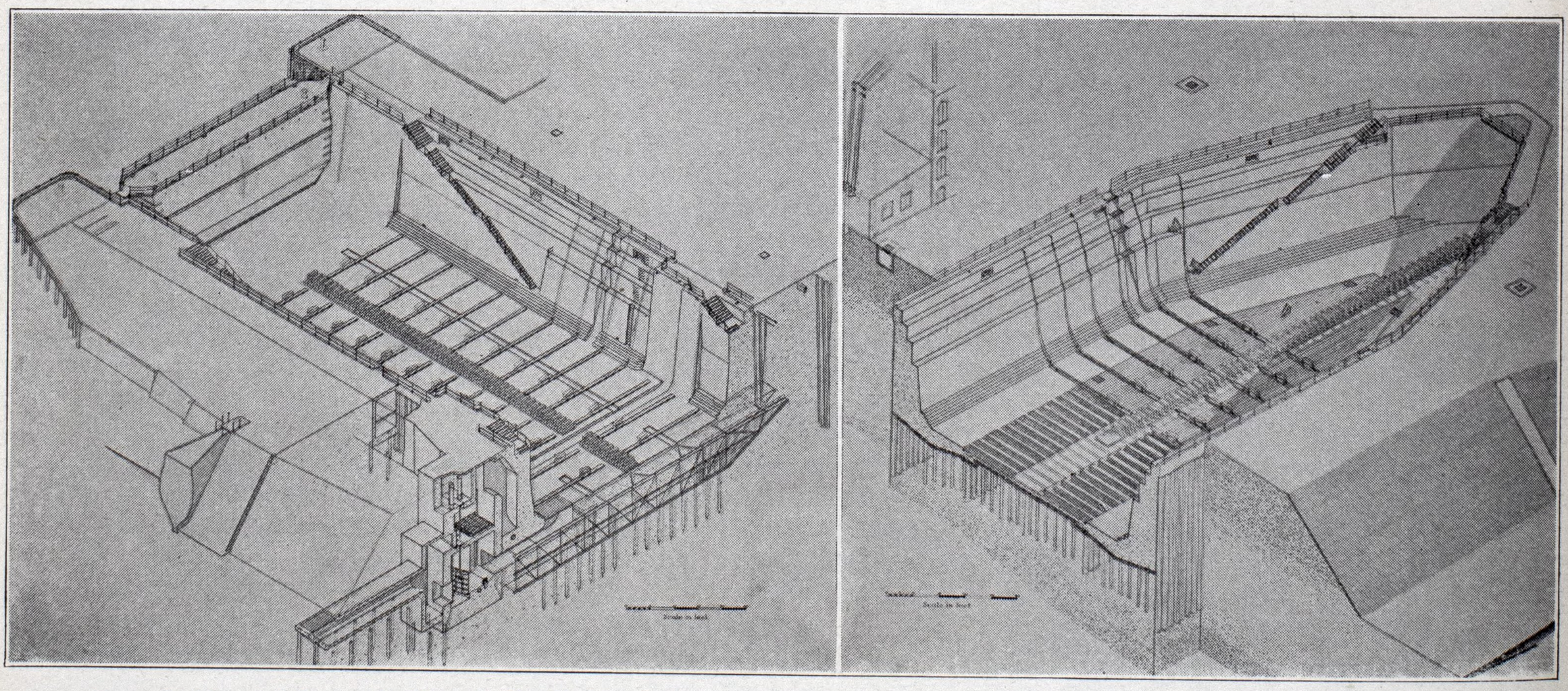
construction of such docks in the past has stretched out over long periods, such as six or seven years and even longer. Still another interesting feature is that the new structure is the first private graving dock to be completed in New York harbor in more than 60 years. It is of historical significance that in tribute to the memory of her grandfather, James E. Simpson, one of the most famous American designers of dry docks, Mrs. Albert F. Foye was present, by invitation of William H. Todd, and took part in the opening of the new Todd dock.

A lot of figures may be cited to indicate the imposing character of the new Todd dock. It has an overall length of 750 feet, a width at the height of the keel blocks of 90 feet and a top width of 120 feet. It is provided with an outer gate seat and an inner gate seat and thus is able to accommodate two vessels at one time. When the floating caisson, a huge hollow steel, box-shaped structure, is placed in the inner seat, a vessel 560 feet long can be placed in the inner dock. An idea of the size of the dock is reflected by the fact that when full it contains more than 16,000,000 gallons of water. The entire dock can be flooded by means of a large discharge culvert and sluice gates in 40 minutes and the inner dock can be flooded in 30 minutes. The entire dock can be unwatered in two hours when there is no vessel in it and in less than one and one-half hours when a ship of maximum size is in it. The inner dock can be pumped out in one and one-half hours and, when there is a maximum size ship in it, in less than one hour. The Todd dock reflects a departure from the previous practice of using centrifugal pumps. This is the first graving dock to make use of screw pumps. There are two of these pumps, 48-inch main spiral screw pumps, driven by 650 horsepower motors. There also are two 15-inch pumps for normal drainage. The sump pumps, pressure pumps and sluice gates for emptying and flooding are operated hydraulically. The real capacity of the pumping plant is 200,000,000 gallons a day, which is equivalent to about one-third of the entire fresh water consumption of New York City.

Unique methods were employed in the design and construction of this dock owing to the fact that the dock is in a foundation of quicksand and boulders. Somewhat similar foundation difficulties were encountered in the construction of the navy yard dock at Brooklyn, N. Y., but there

Dock Particulars

THE new dock is known as graving dry dock No. 1. Construction, which is of concrete and steel, done by the repair yard, commenced on April 4, 1928, and was completed Dec. 7, 1929. There are two positions for the gate and a removable bridge at head end. Length in clear with gate in outer seat and bridge removed is 731 feet. Length in clear with gate in inner seat and bridge removed is 560 feet. Length in clear with gate in inner seat and bridge in place is 550 feet. Length on the floor is 12 feet 6 inches less and on a 3 feet 6 inches grade, 10 feet 4 inches less. The pumping system consists of two 48-inch Morris screw pumps, motor driven, each of 69,000 gallons per minute at 400 revolutions, against a 28-foot head. The pumps are driven by two Westinghouse 650-horsepower 4160 volt, three-phase 60-cycle motors.



Cross Section and Isometric View of the Mammoth New Graving Dock of the Todd Shipyards Corp. at the Robins Dry Dock & Repair Co. Plant, Erie Basin, Brooklyn, N. Y. At Left—Entrance to Dock. At Right—Head of Dock

pneumatic caisson foundation and cut-off walls were placed at a large cost before the dock was built. In the construction of the Todd dock nearly 3000 tons of sheet piling and more than 4000 timber foundation piles were used. And the long delay and great expense incidental to the navy yard construction thus were avoided.

In the construction of the Todd graving dock nearly 60,000 cubic yards of concrete and 80,000 barrels of cement were employed. The dock is built to provide a depth of water 29 feet at the top of the blocks and 32½ feet at the sill. The inner portion of the dock consists of large concrete retaining walls and an open self-draining floor. The outer portion of the dock consists of a slab of concrete 15 feet thick and 140 feet wide, containing approximately 20,000 cubic yards of concrete. This concrete was placed by the underwater or tremie method, concrete being deposited by the tremies or pipes inside of steel-trussed forms. Each form was 10 feet wide, 140 feet long and 15 feet high and 11 of these forms and 12 filler blocks were placed. The tremie forms were of structural steel and weighed 40 tons each. They were lowered to place by a specially constructed derrick. After the completion of this tremie concrete, concrete retaining walls were built on top of it.

Preliminary ground breaking for the structure took place on April 4, 1928 with William H. Todd and President James J. Byrne of the borough of Brooklyn, N. Y. doing the breaking. For a period of two months after this the old timber dock, which occupied the site of the present new dock, continued to be used and the real beginning of construction on the new Todd dock took place in June, 1928. With the new dock in commission, the Todd Shipyards Corp. now has a total of 26 docks in its various yards, enabling it to drydock 175,000 tons of shipping in one day, a capacity not exceeded by any other shipyard in the world.

The Todd dock was designed and built by Rear Admiral Frederic R. Harris, United States navy, retired, who for many years has been regarded as one of the foremost dry dock engineers in the world. Admiral Harris has had an active part in the design and construction of most of the dry docks built in this country during the past three decades, including dry docks at Boston, Brooklyn, Philadelphia, Charleston, Pearl Harbor, Bremerton and other ports.

Index for 1929

The index for the year 1929, *covering all the valuable editorial material which appeared in* MARINE REVIEW *last year, is now ready for distribution. Copies will be sent on request, without charge, to those subscribers who have kept a complete file of copies and desire the index for reference.*

Repairs to Mauretania

The damage sustained by the Cunard liner MAURETANIA on Nov. 28 when she sank a car float, was repaired in record time by a crew of 50 workmen. Two great holes had been torn in the heavy stern plates on the port side by the sharp aft corner of the float. Ordinarily such a task would require dry docking the vessel but in order to keep her in service, the steamer returned to her North river berth and the work was done at her pier with most of the passengers aboard.

Engineers of the Cunard line praised the workers of the Robins plant of Todd Shipyards Corp., Brooklyn, who hurried the repair job through. The damaged plates were cut out and a pattern plate, constructed of wood and tin, taken to the Robins plant for duplication in steel. Meanwhile workers tore out the old rivets and prepared the hull for the new plate. Some rivets were also removed from the starboard side where plates had been strained and new rivets substituted.

After a thorough examination at Quarantine, the MAURETANIA had returned to her dock at eight o'clock in the morning to find workmen awaiting her. By two oclock the new plate was lowered and new riveting begun and by five o'clock the new side was in place and the job was ready for caulking and cement. All told the steamer was delayed only 24 hours.

Atlantic, Gulf & West Indies Steamship lines, and subsidiaries, report net income of $125,003 for October, compared with $80,149 for the same month of 1928. Net income for the ten-month period was $2,585,726, compared with $613,993 for the same period in 1928.

Telephone to the Leviathan 1500 Miles Out

THIS illustration may become historic. It shows the group that attended the inauguration of the ship-to-shore telephone service of the American Telephone and Telegraph Co. with the LEVIATHAN, Sunday, Dec. 8.

Walter S. Gifford, president of the telephone company is at the telephone receiver with Joseph E. Sheedy, president of the United States Lines Operations Inc., at his left and Paul W. Chapman, president of the United States Lines Inc., at his right. Mr. Chapman is listening to the conversation with the earpiece.

With the establishment of this service on a commercial basis, it is now possible to talk to the LEVIATHAN about 1500 miles at sea from telephones anywhere in the United States.

More Economy in Steam Engines

Modern Designs of Marine Reciprocating Steam Engines of Medium Power Permit Higher Pressures and Superheat—Steam Losses Are Materially Reduced

By F. Johnstone Taylor

THE marine reciprocator as seen in the standardized triple expansion set is in many respects becoming obsolete. For the propulsion of passenger and fast freight vessels it cannot compare in efficiency with either the geared turbine or the oil engine, though for the smaller class of freighter it is still regarded as a good proposition. It is cheap to install and simple in construction and possesses that element of reliability which must always be a valuable asset. Certainly in the case of large vessels of 10,000 tons or so quadruple engines and triple engines combined with a turbine on the Bauer-Wauch system which has recently received notice in these columns give good results.

To bring down the steam consumption of the simpler triple or compound engine lies largely in better steam conditions, that is steam at a higher pressure than is usually associated with such engines and superheated to an appreciable degree and then in designing an engine suitable for it. There is no great difficulty in working scotch boilers at pressures up to 250 or 300 pounds and still less in arranging to superheat the steam to quite a high value if necessary. The use of pulverized fuel and air heaters are other directions in which better all round results may be obtained. But the orthodox triple engine with its slide or piston valves is not suited to superheated steam and shows no material advantage if working at pressures much over 180 pounds or so.

Any advance, therefore, towards economy, largely lies in the direction of an improved design of engine. The obsolete slide and piston valve must be discarded in favor of the drop or poppet valve as has long been the case with the best class of stationary engine. Developments on these lines are making appreciable headway in Europe. In Britain engineers are paying a good deal of attention to poppet valve engines constructed to the Beardmore-Caprotti designs. While partaking of the usual features associated with marine steam engine practice, this design is noticeable at once for its compactness which is mainly due to the economy in space which can be effected by the use of this particular valve gear. The cylinders are close up together with the valves at the rear, while the whole operating mechanism, in place of being an array of eccentrics and links, is all contained in a small oil tight casing with its motion taken from a revolving lay shaft. The valves are operated by cams and tappets and by means of a single handwheel, these cams can be manipulated in an ingenious manner to be shown presently, to put the engine in reverse, to control its speed and to adjust the point of cut off upon which the economical use of the steam so much depends.

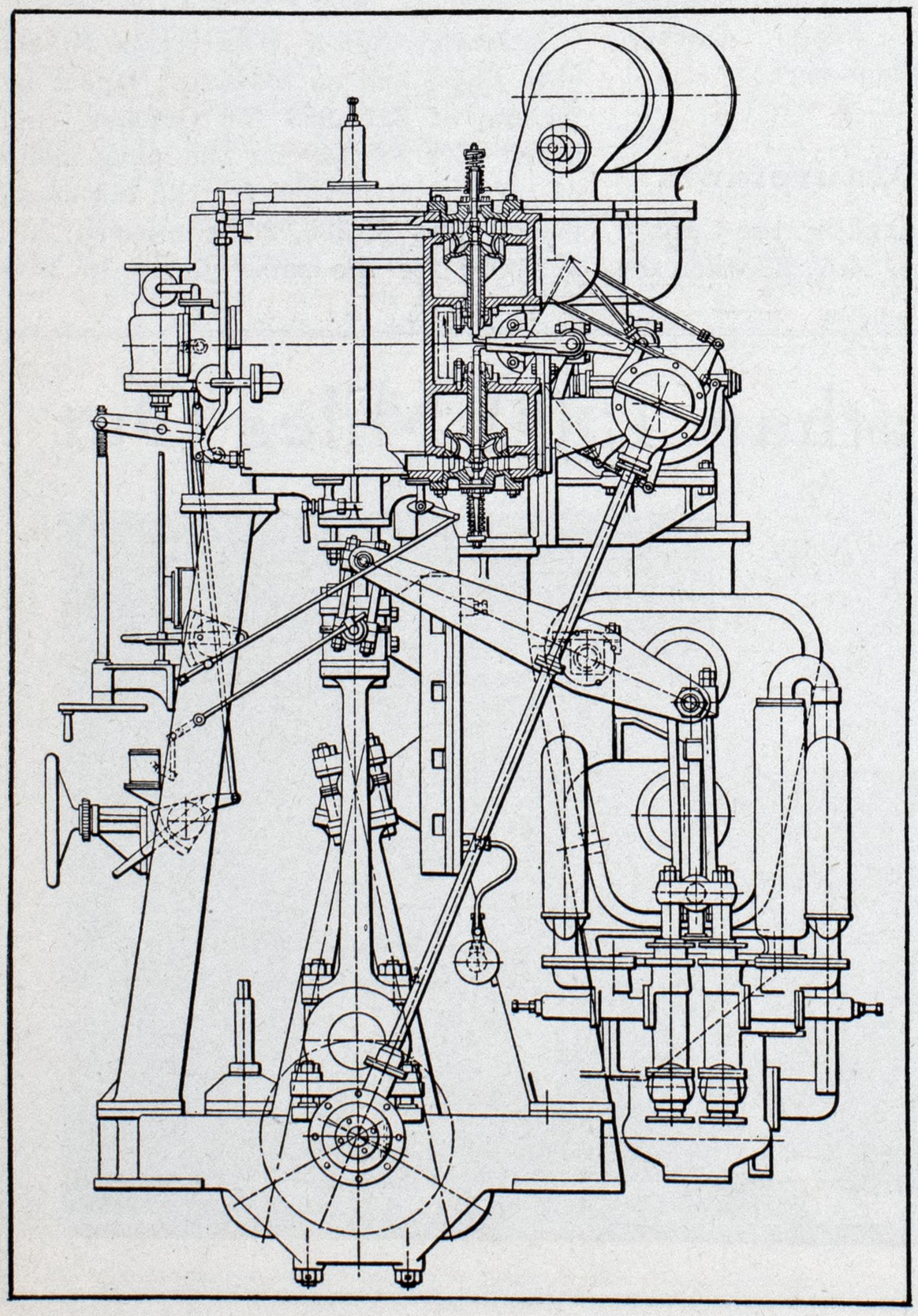


Fig. 1. General layout of 650 horsepower steam reciprocating marine engine of the poppet valve Beardmore-Caprotti design. The design is notable for its compactness due mainly to the space saved by use of this particular type of valve gear. Cylinders are close together with the valves at the rear while the operating mechanism is contained in a small oil tight casing

The present standard design develops 650 horsepower with cylinders 13½ x 22 x 37 inches and 26-inch stroke, the general lay out being shown in Fig. 1. The actual valves while of rather special construction, do not call for any particular comment, principal interest centering in the actual valve gear. On the bracket behind the valve chamber of the center (high pressure) cylinder is a gear box, the essential features of which are shown in Fig. 2, motion being given by the inclined shaft shown in Fig. 1. It is a patented contrivance, perhaps a little complicated at first sight though its working as shown in diagrammatic form in Fig. 3 is really quite simple. The shaft *a* is that shown inclined in Fig. 1 and it drives the cam shaft *b* through bevel gears. On the shaft *b* is cut a quick pitch thread *f* which engages with scrolls *g* and *h*. For each cylinder there are three cams, *e*, *e'*, and *d*, the latter being the exhaust cam. As only one exhaust cam is employed, the extent of the exhaust phase remains constant, though it can be designed as to time and angular lead to suit the working conditions. Of the two admission cams, one effects the opening of the valve while the other controls the closure, while the purpose of the scrolls is to control the angular position of the cams and to drive them.

Both scrolls and cams each has two holes and two slots. The cam *e* for instance is provided with slots corresponding with those in the scroll *g*, the round holes in the latter engaging with the two rods *j* and *k* parallel

to the shaft and fixed in cam *e*. Similarly cam *e'* is driven by the scroll *h* through the medium of the rods *k*. The circular slots in the cams and scrolls are to allow of the relative movement of these parts. Each scroll is maintained in the desired longitudinal position on the shaft by the collars *m* and *l* which are connected to the reversing shaft *q* by the rods *p* and *n*. The operation of this shaft, by altering the position of the scrolls on the screwed shaft alters the angular position of the cams as will now be readily apparent to any position between full forward and full reverse gear. So much for the reversing motion.

The purpose of the double cam arrangement is to make it possible to alter both lead and cut off. In forward gear for example the admission can be advanced by varying the angular position of cam *e'* while the cut off is varied by altering that of cam *e*. These movements can be obtained in such a way as to give a large angular shift to the cam *e* and a small one to the cam *e'*. This is done by setting the cranks of shaft *q* in such a position relative to each other that while the crank pins *r* move about a dead center and impart but little movement to the corresponding collars, the pins *s* move about a position nearly at right angles to that dead center and so impart the maximum movement to the collar which they control. The motion of the valve tappet it will be understood is a compound one, the cam *e* controlling the cut off and the cam *e'* the lead which provides for a far closer adjustment than is possible with any form of link motion.

The Lentz Valve Gear

The Lentz valve gear is extensively employed on the European continent for both stationary and locomotive work, the Caprotti gear being originally designed for locomotive work. The Lentz marine engine is quite a recent introduction and its essential features are shown in Fig. 4. It is built as either a compound or double compound engine, the disposition of the cylinders and valves being indicated more clearly in the plan diagram in Fig. 5.

It is essentially a simple design. The ratio of the high pressure and low pressure cylinder volumes is about 4 to 6 and the total expansion of the steam in both cylinders varies from 15.3 to 11. In the case of the double compound, the high pressure cylinders are in the center. The steam leaving the main stop valve is divided into four flows, two for the forward engine half and two for the aft engine half. There are twelve valves, the inlet valves (*A*), the transfer valves (*B*) and the exhaust valves (*C*) There is no receiver, the two cranks belonging to the same pair of cylinders being set at 180 degrees, while the other pair being at right angles to the first eliminates the necessity for either static or dynamic balancing. Reverting to the section of the cylinder it will be seen that the valves are of the double beat type and are held down to the seatings by means of separate spindles provided with springs. The valve spindles are actuated by separate tappets with rollers, a small but important detail shown in Fig. 6 which ensures correct alignment of the valve mechanism and compensates for temperature changes. The link motion is of the Klug type and is entirely hand operated and can reverse the engine from full ahead to full astern in six seconds.

Seeing that these engines are a

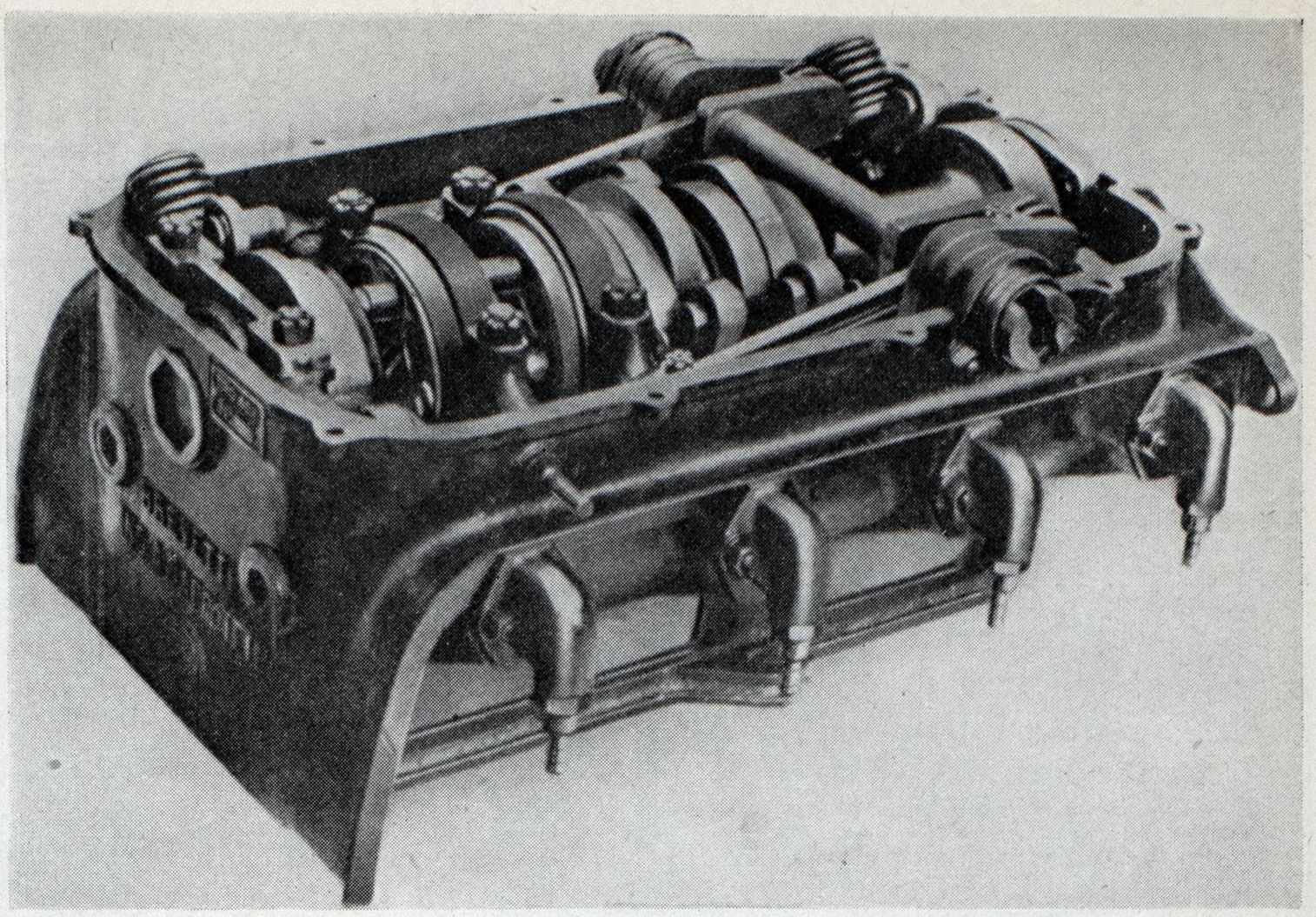


Fig. 2. Valve Gear Box Actuated by Inclined Shaft Shown in Fig. 1

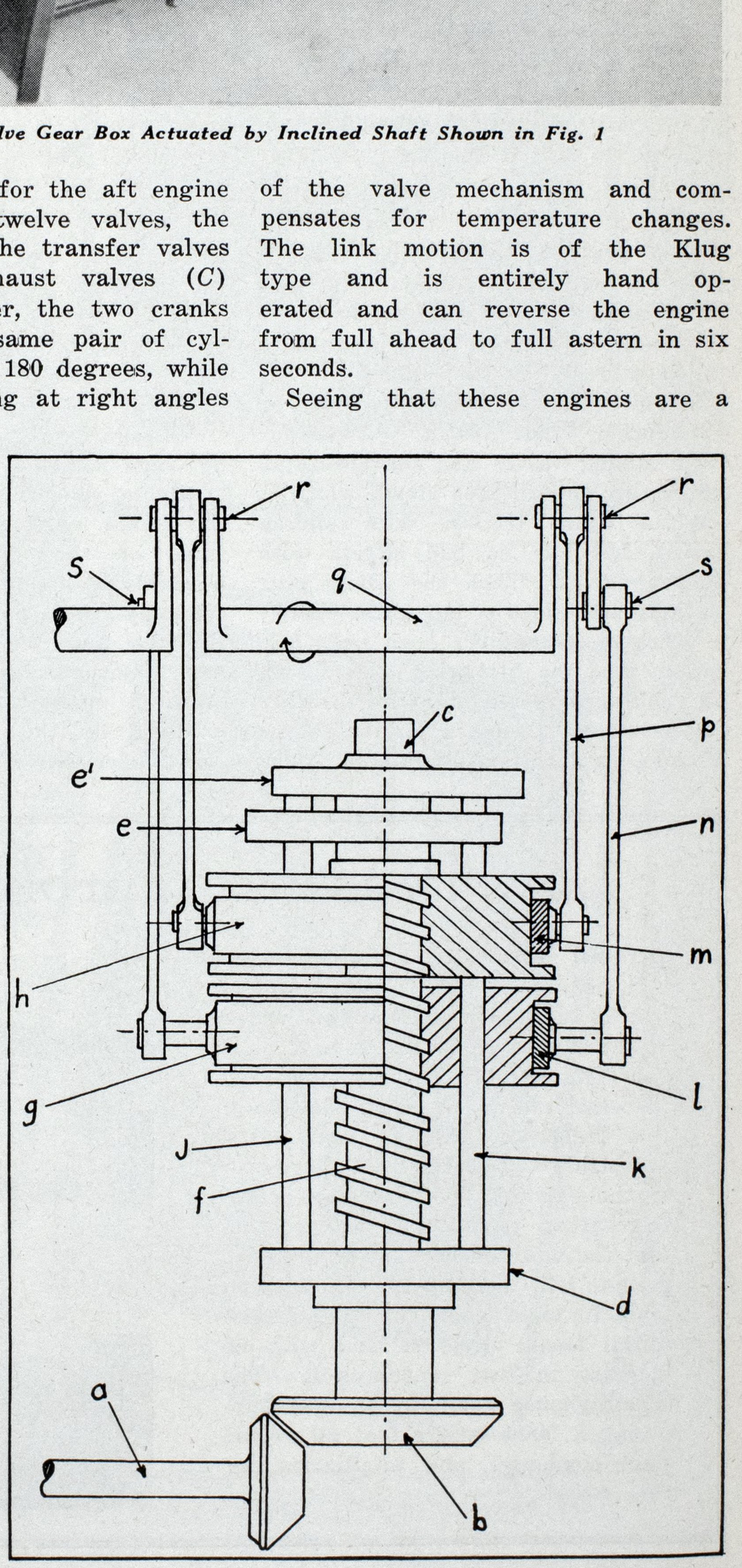


Fig. 3. Diagram showing the operation of the valve gear of the Beardmore-Caprotti design of marine steam reciprocating engine. The inclined shaft (a) shown in Fig. 1 drives the cam shaft (b) through beveled gears. There are three cams for each cylinder (e), (e') and (d) the latter being the exhaust cam

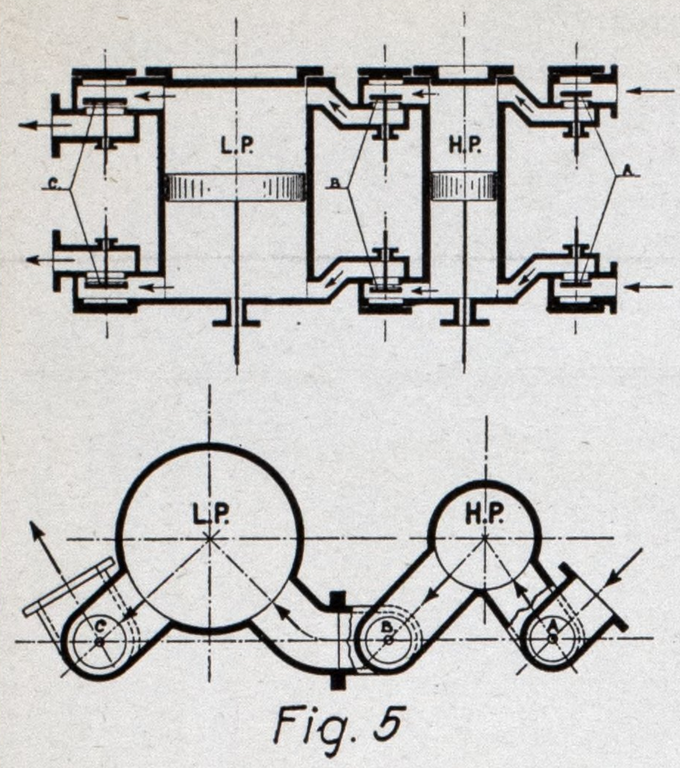


Fig. 5

Fig. 4. Essential Features of the Lentz Marine Steam Engine

Fig. 5. Disposition of Cylinders and Valves in the Lentz Type of Engine Indicated in Plan Diagram

Fig. 6. Valve Spindles in the Lentz Engine are Actuated by Separate Tappets With Rollers

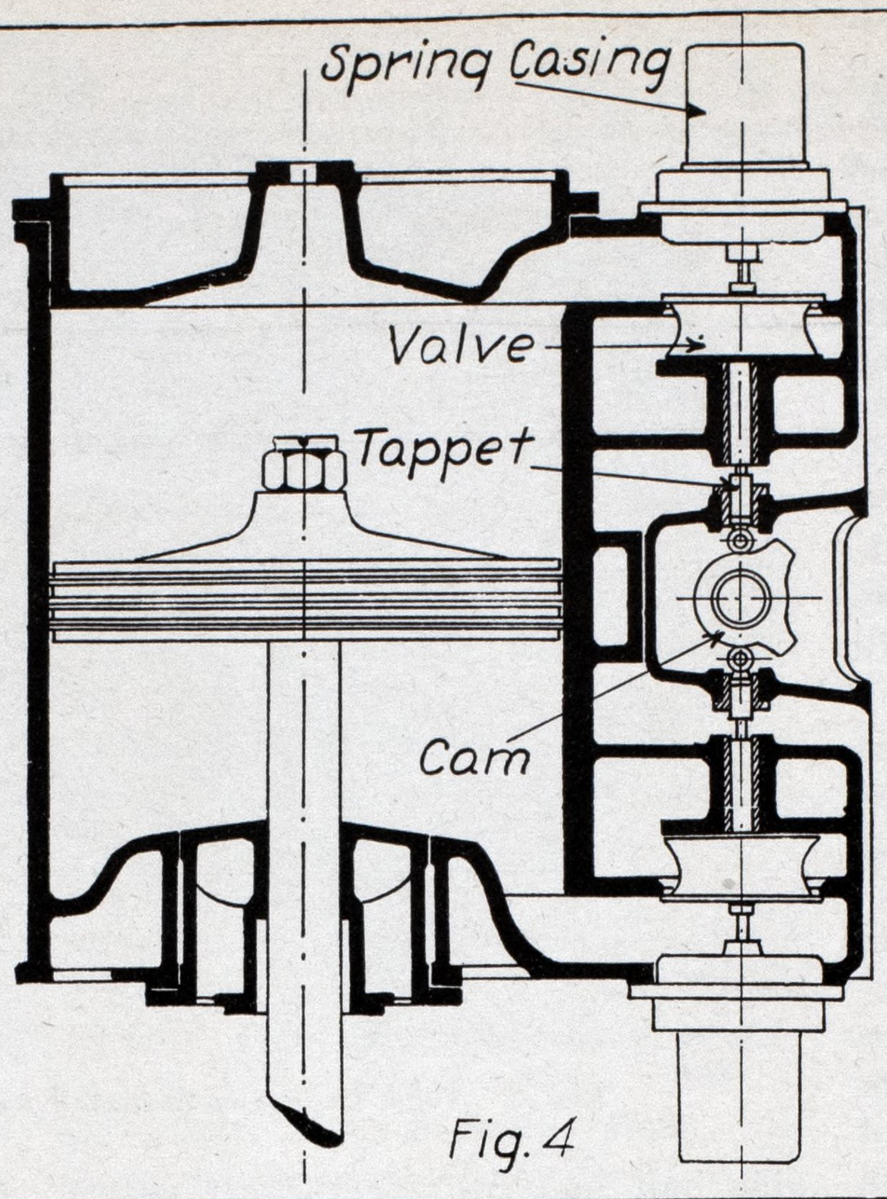


Fig. 4

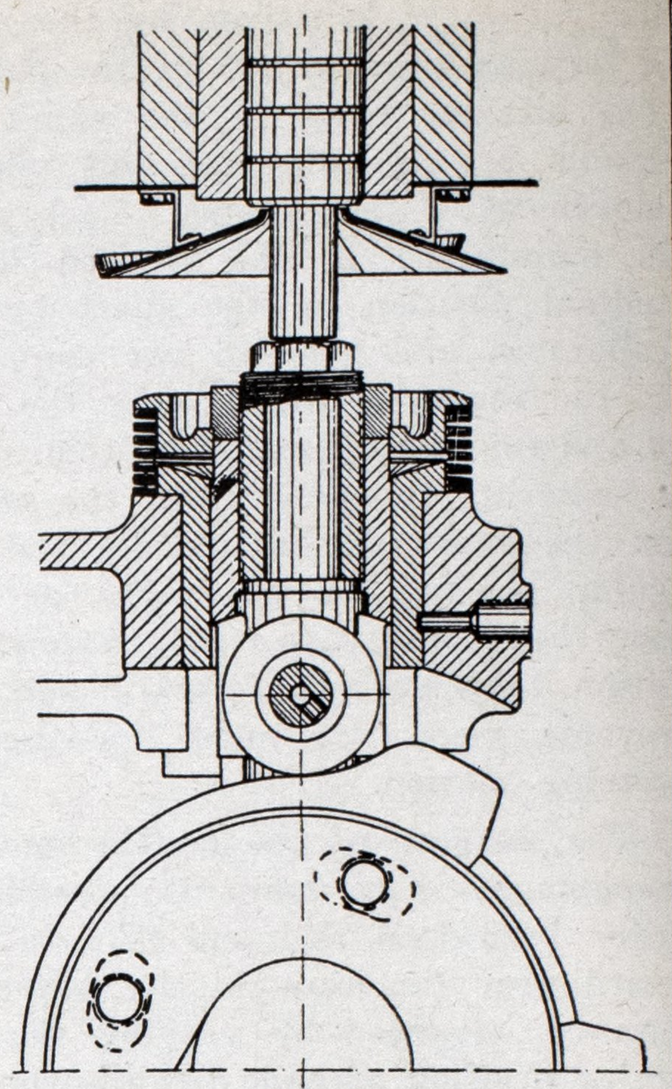


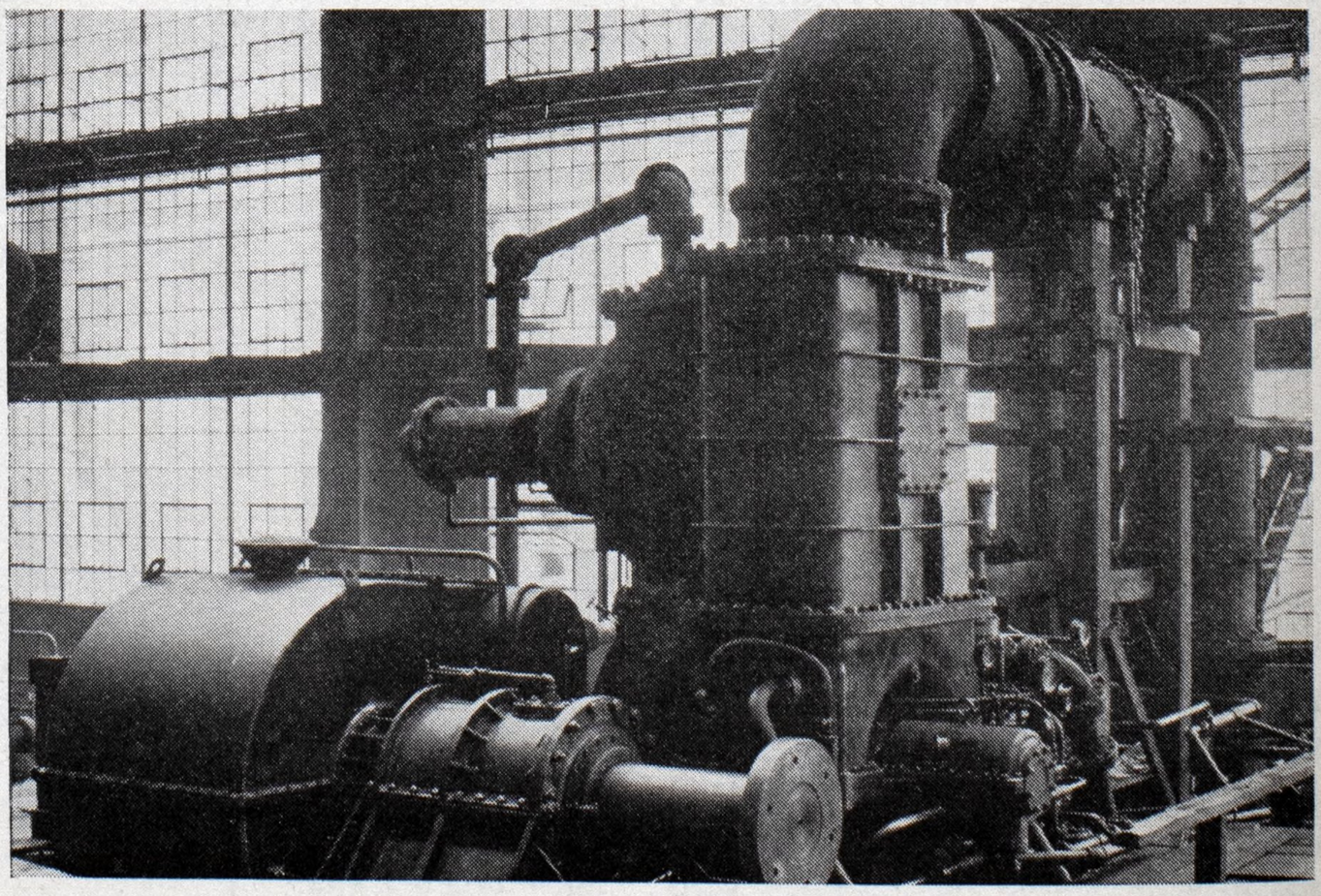
Fig. 6

proved practical engineering proposition, one naturally inquires what material advantages would accrue from this radical departure from a practice followed for half a century. The principal ones are steam economy by eliminating the losses inseparable from sliding valves and the ability to use highly superheated steam which is apt to cause trouble with sliding valves, but has no bad effects with poppet valves. Then the whole gear is light and absorbs but little energy in working, the valves open and close rapidly and the lift being constant at all conditions of cut off, wire drawing of the steam, always a prolific source of loss, is entirely eliminated. The whole power unit then, presuming the use of steam at a pressure and temperature deemed suitable to any particular instance, can be worked at the highest possible economy within the limits of the reciprocating engine.

As regards performance in practice no very convincing results are yet available concerning the working of the Lentz engines as now fitted in some of the ships of the Dutch Koninklyke Parktvaart Maatschappy company and built by Storks of Hengelo and Werkspoor of Amsterdam. But concerning the Beardmore Caprotti engine, the reports of the working of the S. S. DIAMOND a coasting vessel of 850 tons deadweight put into service in 1927 are distinctly favorable. The engines develop 650 indicated horsepower with a boiler pressure of 180 pounds. During official trials the coal consumption worked out at 1.77 pounds per indicated horsepower which represents an economy of 20 to 25 per cent over the orthodox type of engine of similar power. In addition these results, it might be noted, were obtained with the engine developing only about three-fourths of full power, while indicator diagrams and other data show a very marked reduction of steam consumption at low power; a most important matter when a vessel has to run light for any considerable distance.

Low Pressure Turbine to Increase Speed

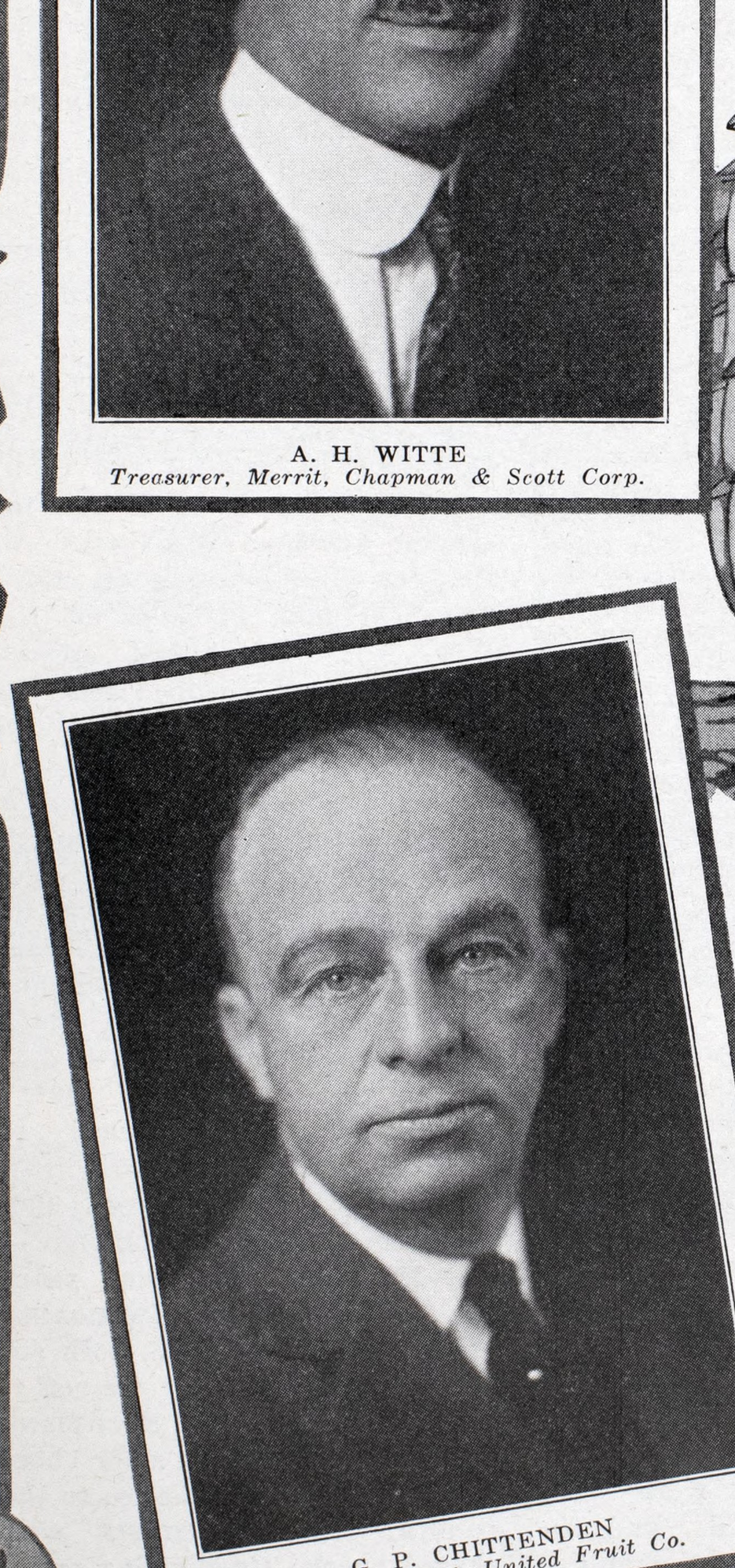
A 1000 horsepower low pressure turbine and reduction gear on test at the South Philadelphia works of the Westinghouse Electric & Mfg. Co. The equipment will be installed on board the SUSAN B. LUCKENBACH (ex. NEPONSET) of the Luckenbach Steamship Co., to augment the power of the existing 3000 horsepower reciprocating engine. It is expected that the addition of the low pressure turbine will increase the ship's speed from 10 to 12 knots, using the same initial steam pressure and with no increase in fuel consumption. The Westinghouse company is also supplying a 5000 square foot all-welded steel condenser and auxiliaries for this vessel.



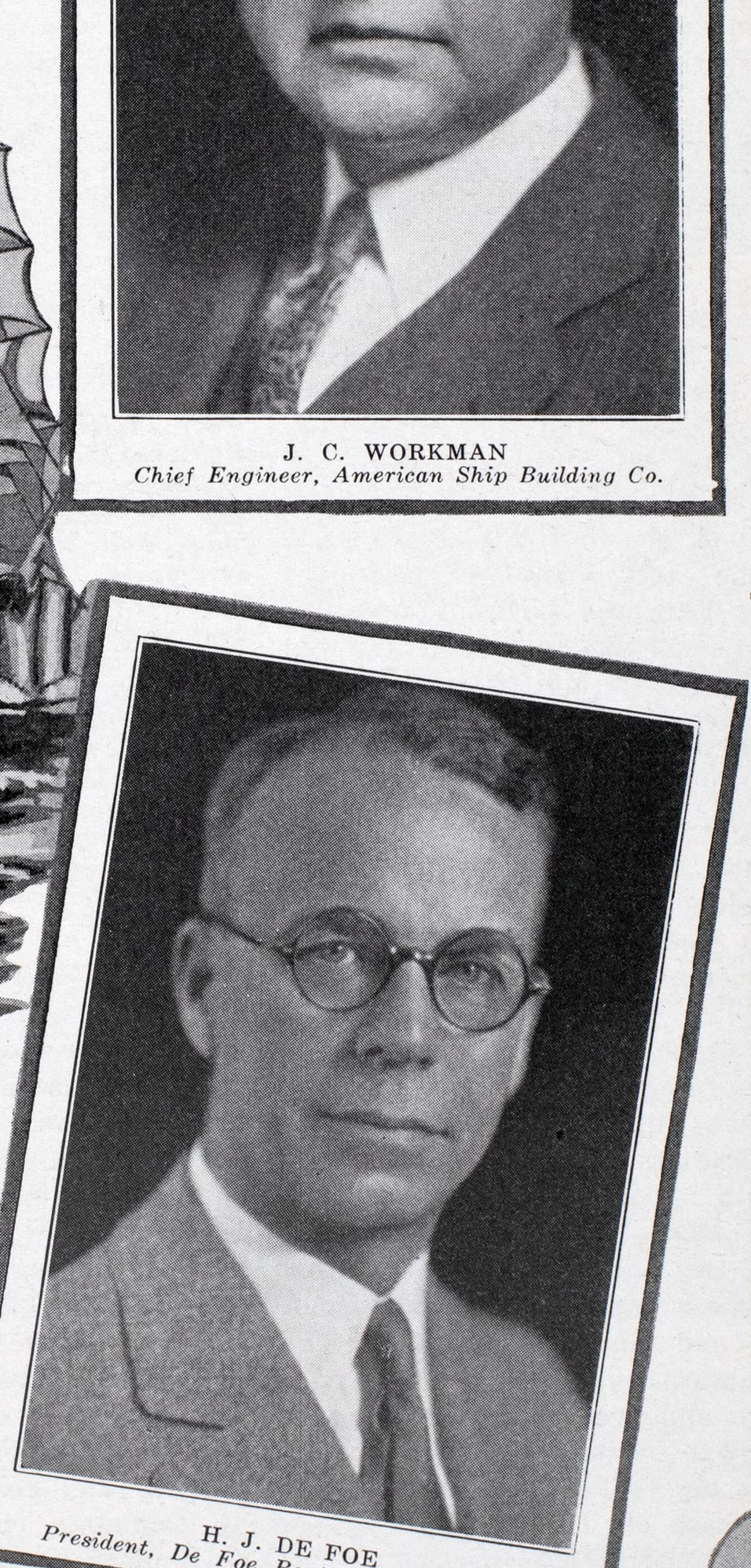
MEN of MARINE AFFAIRS

A. H. WITTE
Treasurer, Merrit, Chapman & Scott Corp.

J. C. WORKMAN
Chief Engineer, American Ship Building Co.



G. P. CHITTENDEN
Vice President, United Fruit Co.



H. J. DE FOE
President, De Foe Boat & Motor Works

Photos by Blank-Stoller, Inc.

Lake Shipping Suffers Heavy Loss

Record Breaking Cargo Movement of 1929 Accompanied by Unusually Heavy Losses in Life and Property—Nineteen Vessels and 111 Lives Are Lost

By Carlos C. Hanks

LOOKING back over the 1929 season of navigation on the Great Lakes, reports indicate the smashing of all water transportation records in the history of the world. During 1928 the total bulk cargo (ore, coal, grain and stone) carried on the Great Lakes exceeded all previous records reaching the enormous total of 127,329,348 short tons. Now even this record it is believed, though detailed figures are not yet available, has been broken.

But another, a sinister record, also came near being made in this record breaking year. A total of 111 lives and 19 vessels approximating 30,000 gross tons were lost during the season of 1929. So, from the standpoint of lives lost, and tonnage wasted, 1929 will go down in the history of the lakes, as a close rival to the deadly year 1913, when 300 sailors perished and 13 ships were wrecked in that historic storm of Nov. 9.

Fire took the first toll of the year, when the steel side-wheel passenger steamers ERIE and DOVER, the wooden ferry steamer SAPPHO, and the old steam tug ANNIE MOILES, were burned in winter quarters at Ecorse, Mich. on Feb. 21. The loss was estimated at $250,000. It is interesting to note that the DOVER, as the FRANK E. KIRBY was on the Lake Erie Islands-Detroit run for more than 30 years, and was the loser in her famous race with the CITY OF ERIE. The ERIE was formerly the OWANA of the White Star line.

The opening loss of the navigation season was the wooden motor barge O. E. PARKS, 392 gross tons, laden with pulp wood, which foundered May 3, in a heavy sea off Thunder Bay Island, Lake Huron, shortly after coast guards had removed Capt. Sam Shields and his crew of 12. The PARKS was built in 1891, as a steamer, and was 135 feet long.

The next storm, that of May 17, blew the big package freighter RALPH BUDD ashore off Eagle Harbor, Lake Superior, and the ship became a constructive total loss. The BUDD, built in 1905 as the SUPERIOR, had a gross tonnage of 4544. This gale also brought the first loss of life for the season, when two deckhands were washed overboard from the WILLIAM B. DAVOCK, off Passage Point, Lake Superior.

Lake Michigan dealt the next blow to lake commerce on the night of Sept. 9, when the steel gravel carrier ANDASTE, foundered in a heavy sea, off Grand Haven, Mich., drowning her master, Capt. Alfred Anderson of Sturgeon Bay, and his entire crew of 25 men. The ANDASTE, equipped with a self-unloading rig, was on voyage from Grand Haven to Chicago, and was 65 hours overdue before fish tugs picked up identifying wreckage 14 miles off Holland, Mich. She was built of steel in 1892, had a gross tonnage of 1439, was 247 feet long, and had the lines of a half-whaleback.

A gale that swept the upper lakes, leaving a trail of freighters ashore, howled down across Lake Erie, and on Oct. 21, ended the career of the N. J. NESSEN, one of the old-time lumber carriers, that, at rare intervals are seen on the lakes. The NESSEN, a wooden steamer, bound from Detroit to Cleveland with scrap iron, was driven on a reef in Pigeon bay, near Leamington Ont. Capt. B. A. Benson, and crew of 12 were saved by Canadian coast guards, and the old hull broke up within the next two days. She was built in 1880, had a gross tonnage of 440, and was 149 feet long.

Then came that black Tuesday—Oct. 22—when Lake Michigan claimed the big steel carferry MILWAUKEE, with her entire crew of 52 men; the biggest single death toll for this lake since 1860 when 287 lives were lost in the sinking of the passenger steamer LADY ELGIN. Commanded by Capt. Robert McKay of Grand Haven, Mich., a veteran of the carferry service, the MILWAUKEE left Milwaukee at dusk of that day, for Ludington, Mich. with 27 loaded freight cars.

Wreckage found by searching tugs and coast guards indicated that the big ferry probably met her end within 25 miles of the Milwaukee harbor entrance. No clue was found as to the cause of the tragedy. The MILWAUKEE, built at Cleveland in 1903, had a gross tonnage of 2933, and was 338 feet long with 56 feet beam. Replacement value of the ship will approximate $1,000,000.

Exactly one week later, shortly after daylight on Tuesday Oct. 29, Lake Michigan overpowered another ship and 16 men of the crew were drowned. This time it was the passenger steamer WISCONSIN, one of the few iron vessels on the lakes. The boat sank 14 miles off Kenosha, Wis., with coastguard crews from that port and Racine, Wis., as well as a fish tug, battling mountainous seas, as they frantically circled around the settling steamer picking up survivors struggling in the icy combers until 59 persons had been saved. The casualty list included Capt. D. H. Morrison of Chicago, and Chief Engineer Julius Buschman of Manitowoc, Wis.

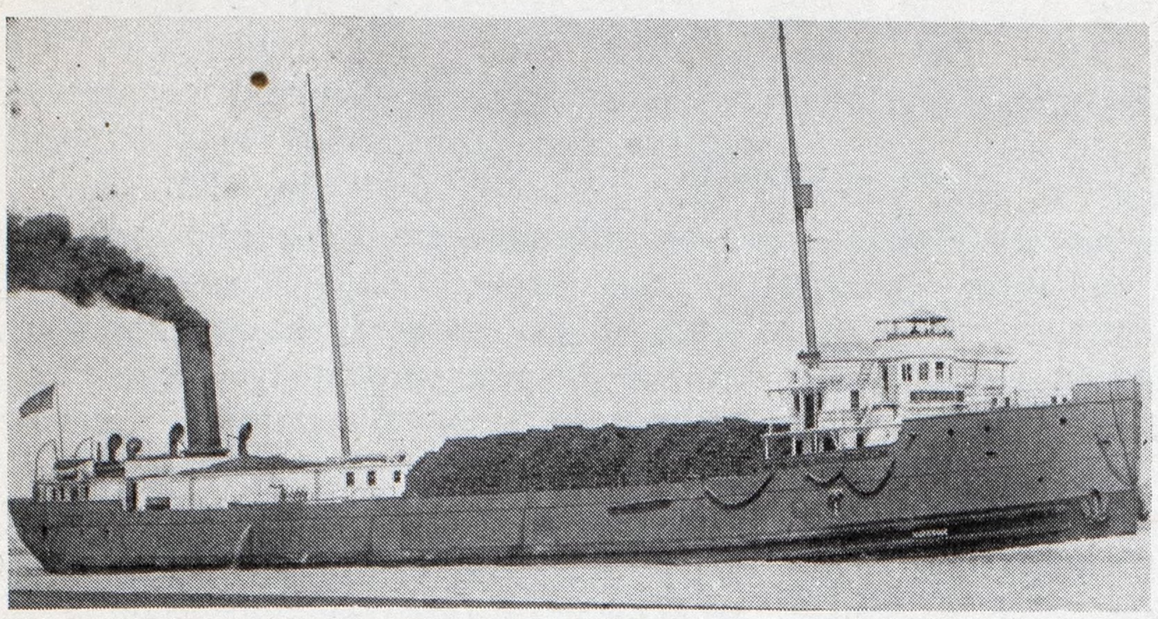
The WISCONSIN, 209 feet long, and with a gross tonnage of 1921, had a varied career. Launched at the Wyandotte, Mich. yard in 1881 and christened the WISCONSIN, she operated between Grand Haven, Mich., and Milwaukee for many years with her sister ship, the MICHIGAN. During the winter of 1885, both steamers were caught in the ice off Grand Haven, and the MICHIGAN was crushed and sank, after her crew had escaped across the ice to the WISCONSIN. The WISCONSIN was purchased by the Crosby line and rebuilt and renamed the NAOMI. Some 17 years ago, the NAOMI caught fire on her way across the lake, and a passenger and two of her crew were burned to death. The charred hulk, beached near Holland, Mich., was salvaged,

Larger and Newer Ships Safe in Lake Storms

IN THIS record of losses on the Great Lakes it is significant that without exception all the disasters due to heavy weather involved only older and smaller vessels. The modern giant bulk ore and coal carriers came through without a casualty. On the whole the weather was not so bad for any length of time as to endanger a seaworthy vessel of modern construction properly loaded and operated. There will always be danger to men and ships in the violent storms which come up so quickly on the lakes but greater care in establishing the real condition of all craft will reduce the possibilities of disaster.

—Editor's Note.

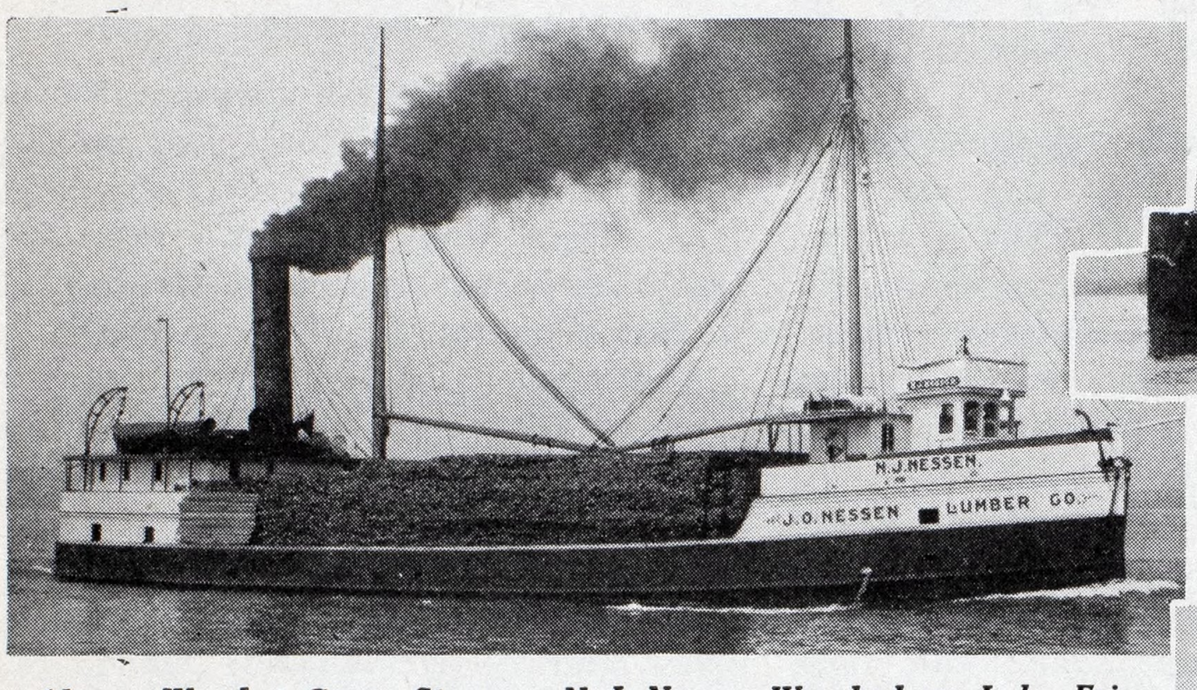
Lost on the Great Lakes During 1929



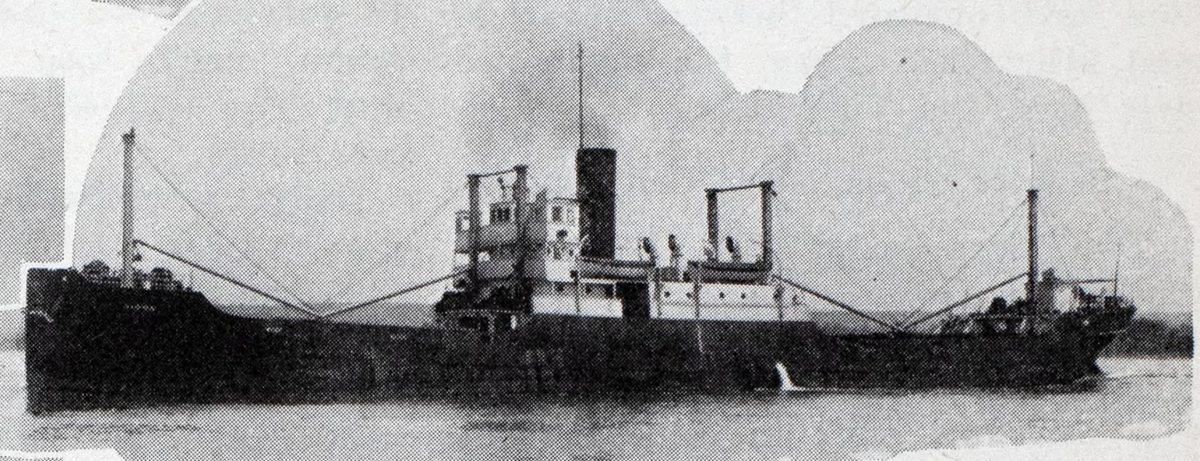
Above—Steel Package Freighter Ralph Budd Wrecked off Eagle Harbor Lake Superior May 16, Without Loss of Life.

Below—Steel Carferry Milwaukee Lost on Lake Michigan, Oct. 22, With All on Board, 57 Men and 27 Cars of Merchandise.

Below—Steel Cargo Steamer Kiowa, Wrecked on Lake Superior Nov. 30. Her Captain and Five of the Crew Were Drowned.

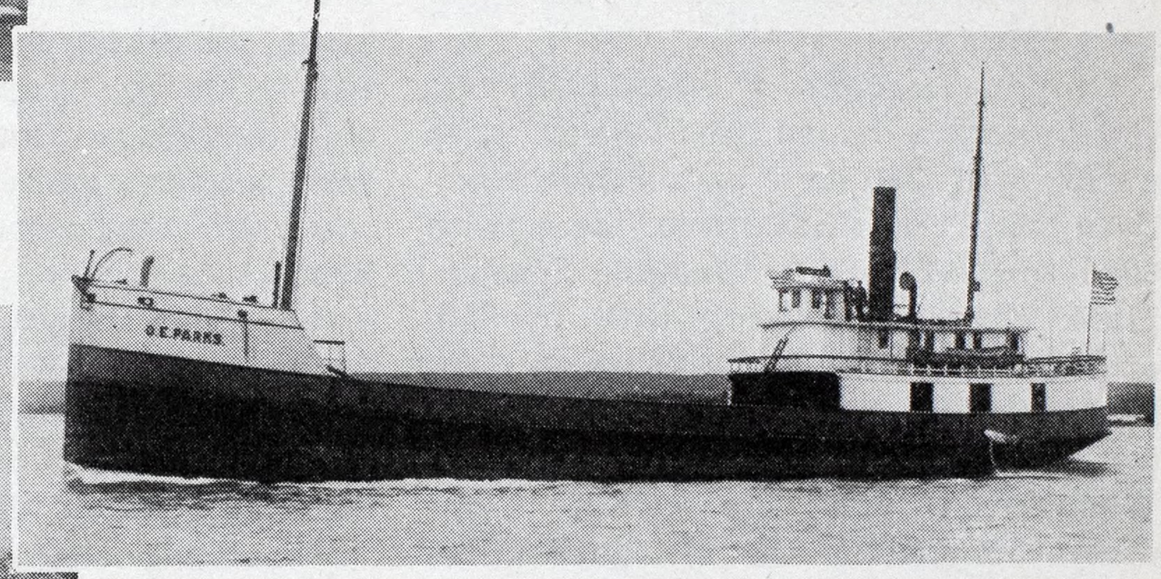


Above—Wooden Cargo Steamer N. J. Nessen Wrecked on Lake Erie Oct. 21. Without Loss of Life.

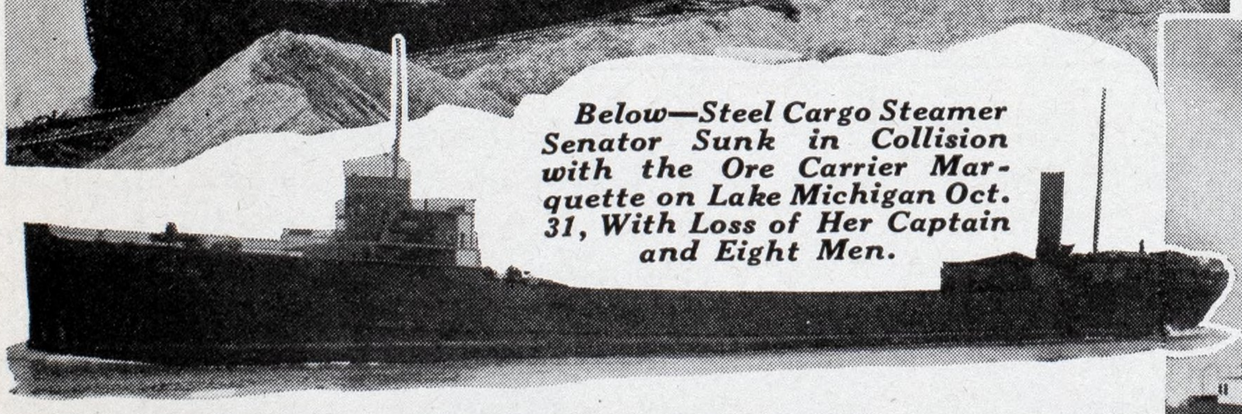


Below—Wooden Motor Barge O. E. Parks Foundered May 3, on Lake Huron Without Loss of Life.

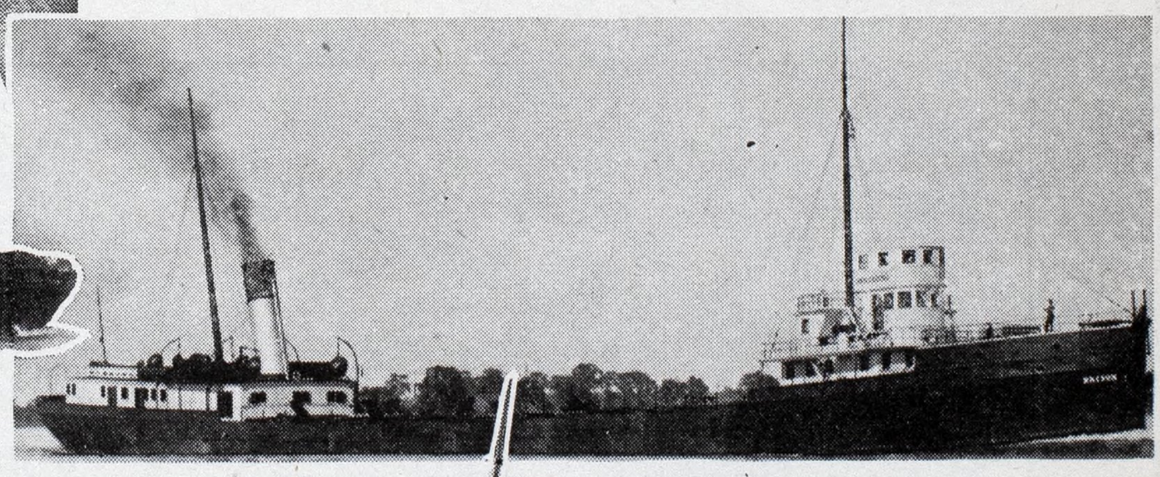
Below—Steel Self Unloading Gravel Carrier Audaste Lost Sept. 9, on Lake Michigan with Entire Crew of 26 Men.



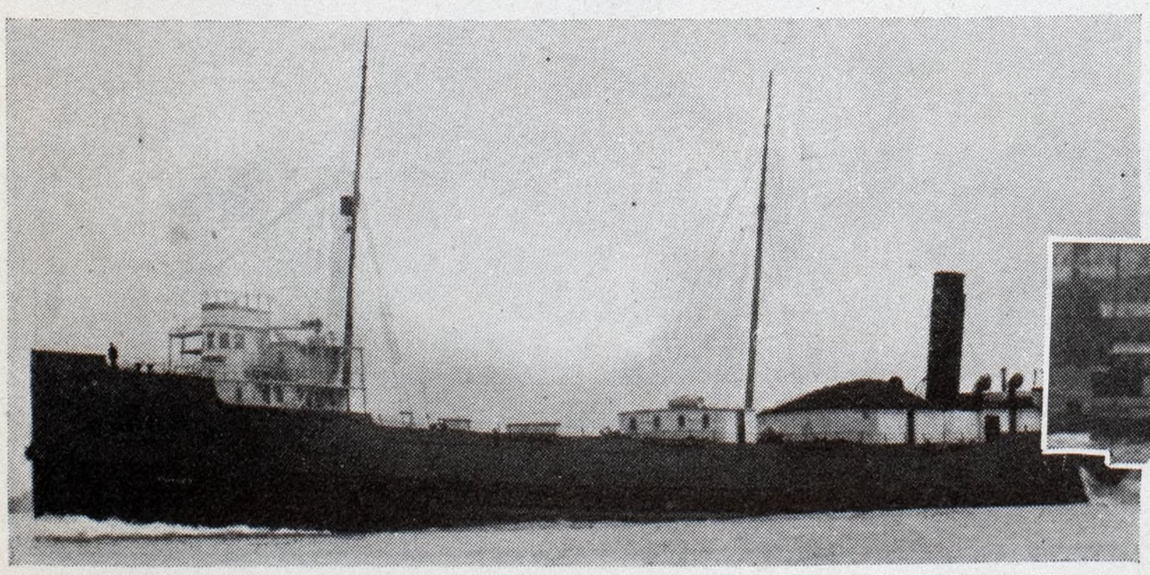
Below—Steel Bulk Freighter Briton Wrecked at Point Abino, Lake Erie, Nov. 13, Without Loss of Life.



Below—Steel Cargo Steamer Senator Sunk in Collision with the Ore Carrier Marquette on Lake Michigan Oct. 31, With Loss of Her Captain and Eight Men.



Below—Steel Package Freighter Chicago Wrecked on Michipicoten Island, Lake Superior Oct. 22, Without Loss of Life.



Below—Iron Passenger Steamer Wisconsin Lost on Lake Michigan Oct. 29, With 16 of Her Crew.

rebuilt and returned to service as the E. G. CROSBY.

It is interesting to record that while the WISCONSIN was sailing as the NAOMI, her mate was Robert McKay who was lost as master of the MILWAUKEE. Newspaper accounts of the burning of the NAOMI, mention McKay as the hero of that disaster. Commandeered by the United States government during the war the CROSBY was christened the GEN. O'REILLY, and served as a hospital ship for contagious diseases, in New York harbor. After the war, the vessel returned to lake service as the PILGRIM, owned by the Wisconsin Transit Co. Four years ago, the ship was acquired by the Goodrich line and operated between Chicago and Milwaukee under the name she first bore, the WISCONSIN.

Senator Sinks After Collision

Two days after the WISCONSIN sank, on Oct. 31, Lake Michigan waters engulfed a fourth ship. This time it was the steel automobile carrier SENATOR, sunk in collision with the steamer MARQUETTE 20 miles east of Port Washington. Capt. George Kinch of Ogdensburg, N. Y., master of the SENATOR and eight of his crew were drowned.

Groping through a blanket of fog, the SENATOR, bound for Detroit with a cargo of 249 new automobiles, collided with the MARQUETTE, laden with 6800 tons of ore for Indiana Harbor, Mich. The MARQUETTE with the aid of tugs was able to make the safety of Milwaukee harbor. Sixteen of the lost ship's crew were saved by a Port Washington fish tug, while three others jumped to the MARQUETTE before the ships parted after the crash.

The SENATOR, owned by the Nicholson-Universal Transit Co., had a gross tonnage of 4048, was 410 feet long and was built in 1896. The MARQUETTE is owned by the Cleveland-Cliffs Iron Co.

Lake Superior took the final human toll of the season when its high seas tossed the steel freighter KIOWA ashore near Grand Marais, Mich., on Nov. 30, after her flaxseed cargo had shifted rendering the vessel unmanageable.

Capt. Alex Young of Marine City, Mich. and five of his crew were drowned when a yawl boat, in which they were trying to reach shore to summon help, was overturned. The 18 survivors huddled in the battered cabins until they were taken off next day by Grand Marais coastguardsmen.

Built in 1920, the KIOWA had a gross tonnage of 2309, and was 251 feet long. She was of what is known as the lake type freighter built for ocean service during the war emergency. Captain Young was a son-in-law of the ship's owner, O. W. Blodgett of Duluth, Minn.

In recounting the disasters of the 1929 season, mention must also be made of those battered ships, from whom crews escaped, and the close of navigation, finds exposed to ice and winter gales on rocky reefs, awaiting the coming of spring to bring the wreckers.

Some of these have already been declared total losses, and others are sure to be surveyed as hopeless wrecks after seas and beach-combers have had their way during the winter.

The big package freighter CHICAGO is ashore on barren Michipicoten Island, Lake Superior, with her stern under water. Capt. P. C. Ferrell and his crew of 31 reached an Indian settlement after great hardships, and were then taken aboard a coastguard cutter and transported to the Sault. The CHICAGO, built in 1901, has a gross tonnage of 3195 and belonged to the Great Lakes Transit Corp., who, it is reported, have abandoned the ship as a constructive total loss.

The grain-laden BRITON, another total loss, lies on Point Abino, Lake Erie, broken from hatch coaming to keel, and deserted by her crew of 28 who narrowly escaped with their lives in the storm of Nov. 14. The BRITON had a gross tonnage of 2434, is 296 feet long and was built in 1891.

Canadians Also Suffer Losses

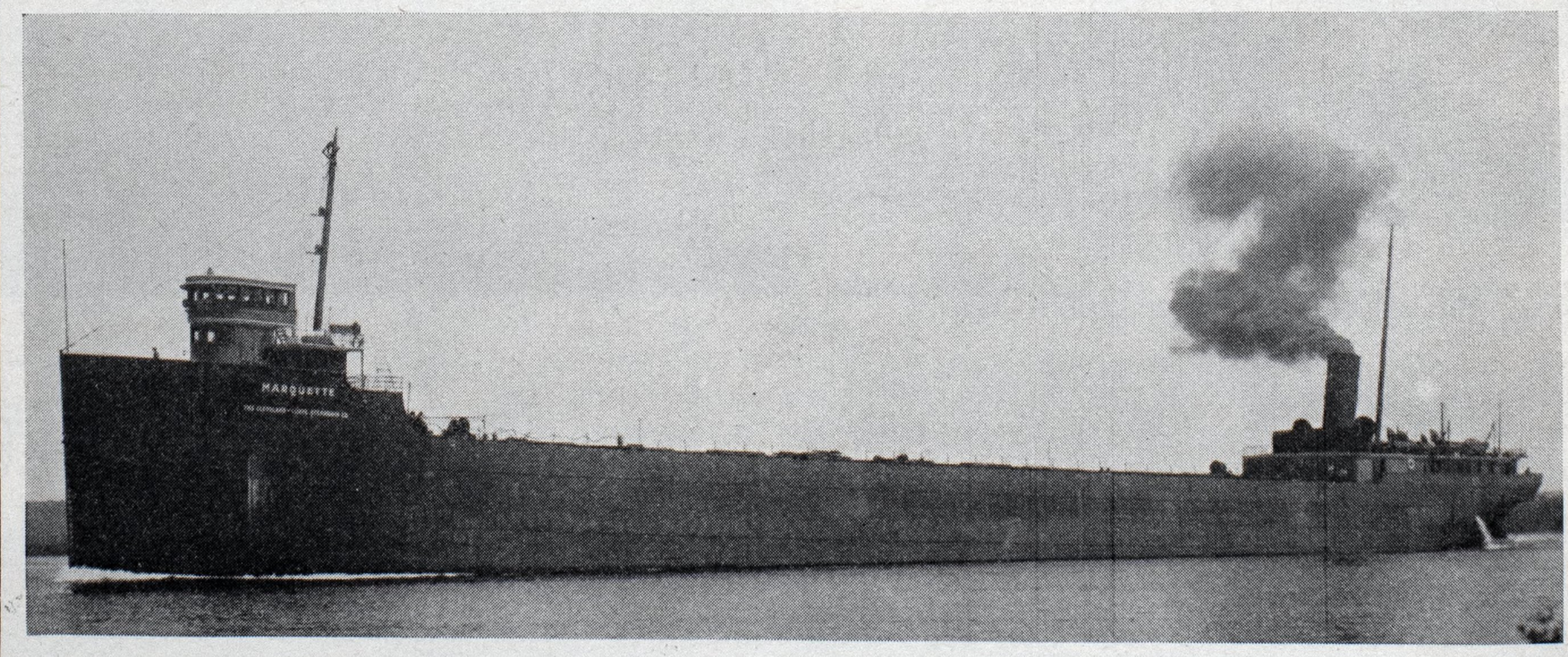
The steel Canadian steamer THORDOC lies a probable total loss on the rocks at Point Porphyry, 42 miles from Port Arthur, Ont., and the steel Canadian steamer SARNIADOC is in bad shape on Main Duck Island.

The wooden lighter BADGER, with a crew of 8 rescued by a coast guard patrol boat, lies on the beach near Point Abino, Lake Erie.

The little steam barge E. J. LAWAY JR., lies partly submerged near the lower end of Drummond Island, St. Mary's river, after being cut through by ice. It is believed her boiler and engine can be salvaged.

The wooden tug JOHN L. RUSSELL, is on the bottom off Brighton, Ont., Lake Ontario, after the storm of Nov. 16 had opened her seams. Her crew of nine men and a woman reached shore in the yawl.

(*Continued on Page* 52)



Bulk Cargo Carrier Marquette Damaged in Collision With Steamer Senator on Lake Michigan Oct. 31, 1929

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

THE Roosevelt Steamship Co. has under consideration construction of five 16-knot 12,000-ton passenger and cargo vessels for its projected service between Baltimore, Norfolk, Havre, Bremen and Hamburg. Addition of these vessels to the company's fleet will provide weekly sailings and will make the run from American ports to Havre in seven days, to Bremen in nine, and to Hamburg in ten. The entire proposal according to Kermit Roosevelt, president of the line is dependent upon award of an ocean mail contract for the route covered by the new service. It is expected that bids are to be called for in the near future.

Having completed the designs for the new ships, the company is prepared to go ahead with the building upon receipt of the mail contract. The cost of the five vessels planned by the line has been variously estimated at between $15,000,000 and $20,000,000. Under the conditions of the Jones-White act, the company can borrow at low-interest rate three fourths of the construction cost of the new vessels. According to conditions laid down by the postmaster general, the company which is the successful bidder for the route will be required to build two 12,000-ton, 18-knot vessels within two years. Commenting on the possibility that the newly established route might conflict with the United States lines, Mr. Roosevelt stated that he could see no connection between the two. In this regard, he also said that direct passenger and cargo service would be made possible between Baltimore and Norfolk and foreign ports, a service which in the past has not been afforded these localities. Rates on the new vessels which will have accommodations for 100 passengers, will be unusually low, probably $100, according to Mr. Roosevelt.

The original proposal of the Roosevelt line to the shipping board was that it would purchase and recondition five vessels of the INDEPENDENCE type at a purchase price of $30,000 for each vessel and that it would spend approximately $1,350,000 on reconditioning and re-engining them. On account of the time that would be required for the reconditioning, this plan was abandoned in favor of the new building. It has been estimated that the first of the new vessels could be completed within a year and a half after the letting of the contract.

Reports have been in more or less wide circulation that powerful interests which include the Pennsylvania railroad and other Baltimore groups are connected with this project. No comment was made on this fact by Mr. Roosevelt.

American Export Line Contract Signed

Under the terms of an ocean mail contract signed by the postmaster general Dec. 11, with the American Export Steamship Corp., six new vessels are to be added to the American merchant marine by 1936. The contract was of a supplemental nature and requires an extension of present services to ports on the Black sea. The signing of this contract will increase the amount received by the American Export line from $1,084,485 to $1,809,165. Terms of the contract call for completion of two ships in 1931 and two more in 1932. Two more are to be completed in 1935 and 1936. The contract provides also that if it is deemed fitting and if business requires it, the postmaster general can ask construction of two more ships, one in 1937, and another in 1938.

Two vessels for the line are already under construction in the yards of the New York Ship Building Corp. at Camden N. J. Two more vessels have been contracted for by the same company. Under terms of this supplemental contract, the American Export line is to extend its services to include the ports of Odessa, Noross-iiski and Batoum.

The new vessels of the line will cost between $2,500,000 and $3,000,000 each, making the total cost of the fleet of eight not less than $20,000,000.

Announce Details of New Tide Water Tankers

On Sept. 24, 1929, a contract was entered into between the Tide Water Associated Transport Corp. and the Sun Shipbuilding & Dry Dock Co. for the construction of two-deep-draft seagoing tankers of approximately 13,500 deadweight tons each. The vessels will be built under special survey to the highest class of the American bureau of shipping. Each vessel will be practically 500 feet in length overall, with a beam of approximately 66 feet and drawing approximately 27 feet 6 inches in a loaded condition.

The general design provides for a two-deck, shelter deck type, with poop and forecastle built with a straight stem and semi-elliptical stern. The framing is the patented longitudinal bracketless system of construction. As usual in tankers, the machinery is aft, with the remainder of the hull proper divided by transverse and center line oil tight bulkheads into nine main cargo oil tanks on each side of the center line. In addition to the main tanks, summer tanks, five on each side, are provided in the wing 'tween decks.

The main propelling machinery will consist of a single screw driven by one Sun-Doxford opposed-piston oil burning marine engine, developing a shaft horsepower of 2800 and giving the vessel a loaded sea speed of 10½ knots.

The capacity of each vessel when carrying crude oil will be approximately 100,000 barrels of 42 gallons each, and when carrying gasoline approximately 115,000 barrels.

The vessels will carry a crew of 36 men, the master and mates being quartered in the bridge house structure amidships, and the chief engineer and his assistants being located in the quarters aft.

A water tube boiler with a designed working pressure of 200 pounds, fitted with forced draft for burning oil fuel, together with all necessary auxiliaries, is included in the design in addition to a gas heated boiler for the purpose of supplying steam to the main cargo tank heater coils and to the steam heating equipment and also for operating all steam auxiliaries.

Two four-cylinder Winton auxiliary diesel engines are also included in the machinery installation for the purpose of supplying electrical power for the electric auxiliaries aboard ship.

The completion date for the vessels is early in the fall of 1930, after which

time they will probably be used in the foreign trade service of the company, in connection with its business in Venezuela, Dutch West Indies and the Argentine Republic.

Order Two Tankers

The Standard Shipping Co., subsidiary of the Standard Oil Co. of New Jersey, has placed a contract with the Federal Shipbuilding Co., Kearney, N. J., for the construction of two 18,000-ton tankers at a cost of approximately $3,000,000. The vessels are to be launched in about a year's time. These new vessels are to be among the largest of the type flying any flag.

To Build New Car Ferry

The Overseas Railway, Inc., operators of the car ferry SEATRAIN between New Orleans and Havana are planning construction of another similar vessel due to the success of the service. The SEATRAIN entered service last January and has been carrying practically capacity loads since the first few months of service. It is the plan of the company to build the new vessel in this country, whereas the SEATRAIN was constructed in Great Britain. According to reports, the company has other routes under consideration on which to operate the new vessel. It is expected that the new ferry which would cost $1,000,000, will be placed in service by January 1931.

Ask Bids on Towboat

Bids will be received until Jan. 15, at the United States engineers' office at New Orleans for the construction of one diesel driven steel towboat. Dimensions of the new boat are 65 feet long and 6 feet beam.

Latest Data on New 27-Knot Italian Liner

The Navigazione Generale Italiana line has placed an order with the Ansaldo Shipbuilding Co. for a new 27-knot liner of 47,000 gross tons which will make the run from New York to Gibraltar in five days and to Naples in seven. This will shorten the schedule of the line by two days.

The cost of the new vessel is expected to be in excess of $15,000,000. She is to be named the GUGLIELMO MARCONI and is to be over 900 feet long, with accommodations for 500 first class passengers, 600 second class, and 800 third class. The vessel is to be of the most modern typ in every respect.

High pressure superheat turbines similar to those which power the German super liner BREMEN are to be installed in the GUGLIELMO MARCONI. Construction of this liner has been made possible it is said by financial aid which Italy is giving its merchant marine. Not only is the government supplying liberal loans at low rates, but in addition is guaranteeing special subsidies based on the vessel's speed.

The Lloyd Sabaudo line signed a contract Nov. 25, with the Triestino Shipbuilding Co. for a 45,000-ton super liner for the North American route. This vessel is to be named the CONTE AZZURO and is to cost approximately $15,000,000. This ship is to be similar in accommodations and propulsion machinery to the GUGLIELMO MARCONI, building for the Navigazione Generale ITALIANA.

Six Tankers to Be Built in Europe

Contracts have been signed by the Standard Oil Co. of New Jersey with shipbuilding companies in Great Britain, Germany and Italy for construction of six of the largest oil tankers ever designed for the European trade, according to announcement of the company Nov. 18. These vessels which are to be of 16,000 tons burden each are to be operated in the English, German, Italian, French and Scandinavian trades.

England is building two of the new tankers, Germany three and Italy one. The British companies engaged in the work are the Furness Shipbuilding and Dry Dock Co. and the Thomas Shipbuilding & Iron Works. The German concerns involved are the Krupp works at Kiel, the Bremer Vulcan Works at Vergseak and the Nord Seewerke. In Italy the work is to be done by the Cantiere Navale, where the greater part of the Italian warships and commercial vessels are constructed.

The new vessels will carry all the latest and most modern equipment, engines, and safety devices. No statement has been made regarding the cost of the vessels, but assuming that the foreign shipbuilding rate of $80,000 a ton applies, construction of the new vessels would require an outlay of $8,000,000 or more.

In some circles there has been criticism of the placing of these contracts abroad on the grounds that the expenditure of $8,000,000 in foreign shipbuilding yards was unpatriotic at a time when every means is being taken to stimulate American industry. On the other hand it was very necessary that the ships be built abroad because American-built ships cannot compete in foreign trade lines. Furthermore, the vessels are to be operated in European services by foreign companies and, consequently, must fly foreign flags. Obviously there were no two ways about it.

To Overhaul Vessels

The United States lines recently announced its program of winter dry docking, renovating and minor changes of some of the line's vessels. The liner GEORGE WASHINGTON, after being renovated at the Boston Commonwealth dry dock, sailed recently on the first voyage of a United States lines liner to Hamburg, which port was lately made the eastern terminus of all ships of the line except the LEVIATHAN.

The AMERICA has been laid up at the Morse Dry Dock at Brooklyn where her tourist third class accommodations are to be increased, a smoking room added, and the dining saloon made larger. The REPUBLIC recently went into dry dock for renovation and general inspection in preparation for two cruises to the West Indies. The LEVIATHAN is to go into dry dock after her first arrival in New York in February. The PRESIDENT HARDING, which has been idle for some time, is to resume her schedule Dec. 24.

S. S. Lake Elkwater Sold

Sale of the steamer LAKE ELKWATER to Moore & McCormack Co. Inc., New York, for operation in coastwise trade of the United States, was approved by the shipping board on Dec. 18. The price fixed for the vessel is $31,000. The LAKE ELKWATER is a steel cargo vessel of 4050 deadweight tons, equipped with reciprocating engines and Scotch oil burning boilers. She is designed to steam at 9½ knots. The vessel has been in layup at Norfolk since 1921.

To Sell S. S. Orion

Advertisement for sale for dismantling of the steamer ORION, a former German vessel now laid up in the James river near Norfolk, was authorized by the shipping board on Dec. 11. Bids are to be received by Jan. 8, 1930, at 12 o'clock noon. The vessel is a steel cargo steamer of 5160 deadweight tons, equipped with reciprocating engines and Scotch coal burning boilers. She was built in 1902.

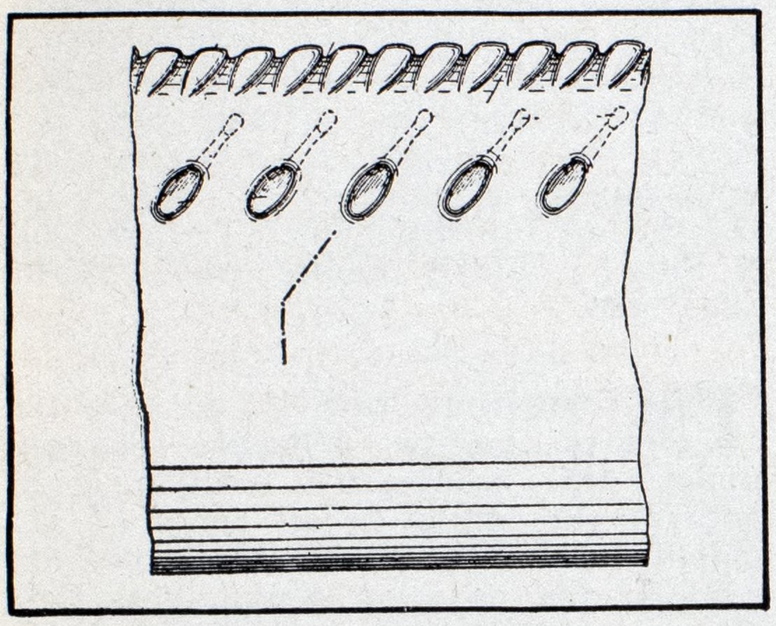
Patents Show Marine Development

Latest Marine Inventions Described

Specially Prepared for Marine Review
By Richards and Geier

Patent Attorneys, 274 Madison Avenue, New York

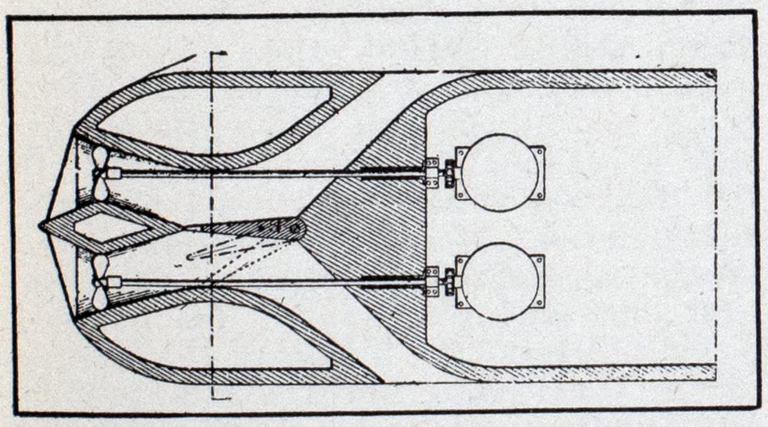
THIS invention relates in general to propellers and screws of the kind employed on air and water craft and is concerned more particularly with propellers and screws of the type provided with so-called nozzle or slot devices, that is, screws the blades of which are provided with nozzle-like orifices or passages or with nozzle-like slots or grooves at the trailing edges or are furnished with both these devices.



PROPULSION SCREW

United States patent No. 1,717,745. Issued June 18, 1929 to Friedrich Tismer, of Berlin, Germany.

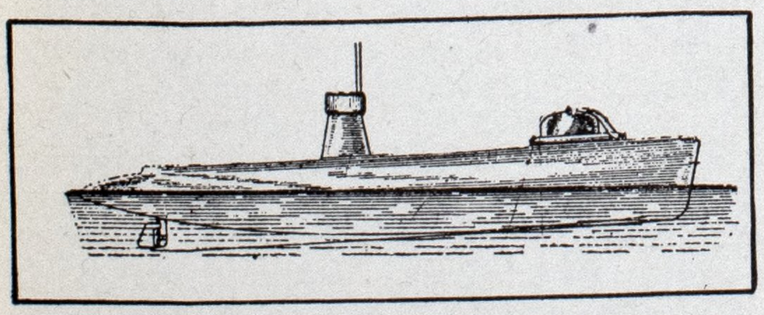
THIS invention relates to watercraft and the improvements are directed to a novel form of speedboat wherein rolling and pitching of the same are reduced to a minimum.



MULTIPLE-FLOAT SPEED BOAT

United States patent No. 1,726,618. Issued Sept. 3, 1929 to Monroe Green, of Brooklyn, New York.

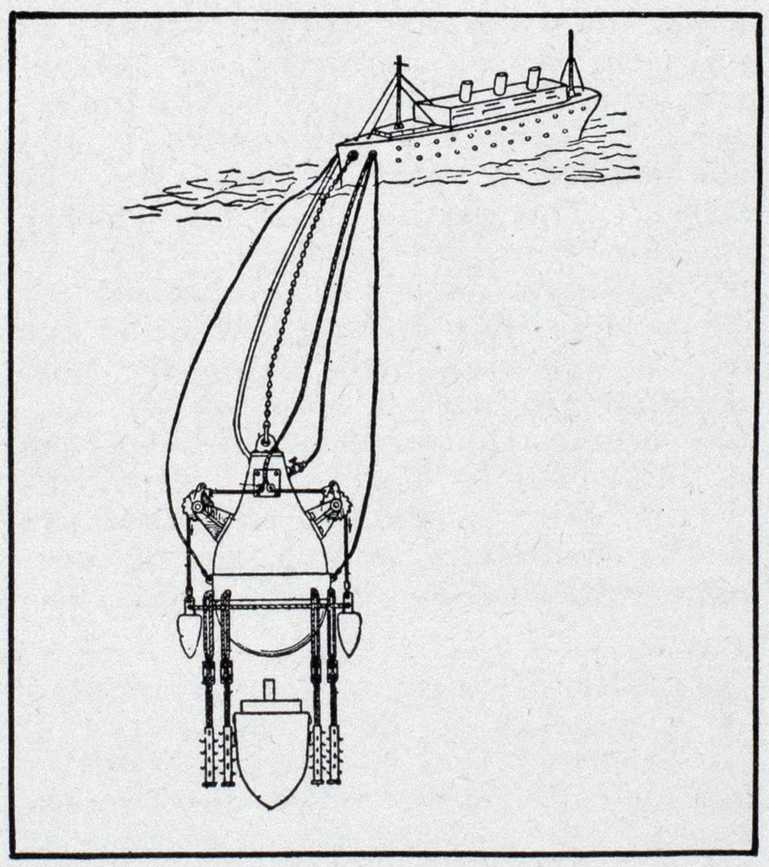
THIS invention relates to a device for indicating the position of submerged or sunken craft and for communication therewith and more specifically to a float associated with the deck of the craft which is designed to be released from within the craft and which contains means for communicating with said craft.



POSITION INDICATING AND COMMUNICATING DEVICE FOR SUBMERGED CRAFT

United States patent No. 1,726,607. Issued Sept. 3, 1929 to William R. Blanchard, of Bremen, O.

WE HAVE made arrangements with the patent attorneys, Richards & Geier to publish data relating to letters patent issued in the United States covering inventions which may be of particular interest to our readers. The patents described, some of which have accompanying cuts partially illustrating the inventions, are all of recent date and we are planning, in subsequent issues, to publish similar information on patents pertaining to various phases of marine development work. Should our readers be interested in obtaining a printed copy of any of the patents appearing in this issue, or any other patent desired, such copies may be had by addressing request to the editor or direct-to the contributors of this page.

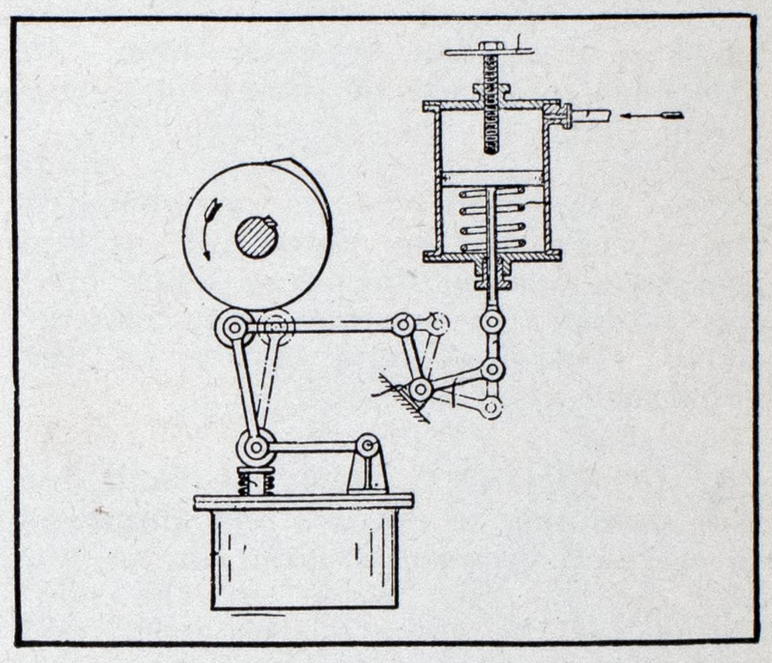


DEVICE FOR RAISING SUBMERGED OBJECTS

United States patent No. 1,728,470. Issued Sept. 17, 1929 to John M. Boscardin, of Canaan, Connecticut.

A PURPOSE of this invention is to provide a device for raising submerged objects, the device comprising a hollow receptacle, or a plurality of them, adapted to be supplied with sufficient liquid to submerge it in the proximity of the object to be raised, and having adjustably suspended from the hollow receptacle a plurality of grappling cables, operable means being attached to the hollow receptacle for bringing the grappling cables into desired position in contact with the object to be raised.

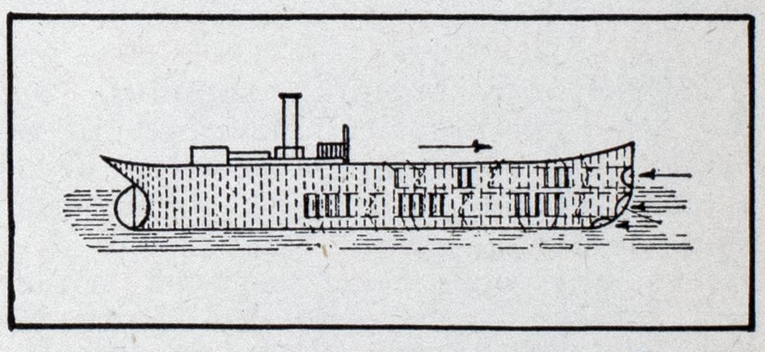
THIS invention has for its object to afford a means for automatically regulating, in machines in which the moment of injection is determined by the fuel pump.



DIESEL ENGINE

United States patent No. 1,698,161. Filed Mar. 9, 1927, Martin Louis, Kiel, Germany.

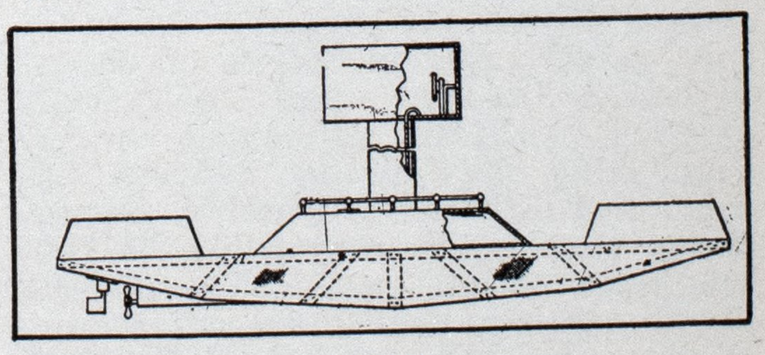
THIS invention consists in separating the body from the currents of liquid or air, as the case may be, by interposing masses of liquid or air automatically moved in a direction opposite to the direction of the forward movement of the body.



MEANS FOR OVERCOMING FLUID FRICTION

United States patent No. 1,726,882. Issued Sept. 3, 1929 to Arno Boerner, of Dresden, Germany.

THE present invention relates broadly to the art of marine propulsion, and more particularly to an improved hull construction for vessels and to improved propelling means cooperating therewith.



BOAT

United States patent No. 1,726,962. Issued Sept. 3, 1929 to Louis B. May, of Pittsburgh, Pa.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

QUOTING from the case of Thomas Bell & Co. Ltd., v. Stewart, 31 F. (2d) 44: "The terms of the charter party determine the proper person to receive notice of arrival and readiness to discharge as between the owner and the charterer, and, as between them, the charter party controls the bills of lading * * *, when there is a conflict between them. In this case, the bills of lading prescribe notice both to the consignee and to Angevine; the charter party is silent as to Angevine. So far as concerns the giving of the notice of arrival and readiness to discharge after having passed the customs, the charter party controlled, and notice to the consignee alone sufficed.

* * *

A CONSIGNEE, solely at fault for dumping of cargo and damages to a scow because moored in an unsafe berth, was liable to the consignor for the value of the cargo and primarily liable to the owner of the scow for damages to the scow, it was held in the case of Goodwin-Gallagher Sand & Gravel Corp., v. Washington Bulkley, Inc., 31 F. (2d) 112. The consignor it was declared, being liable to the owner of the scow under charter party for return of scow in the same condition as received except, ordinary wear and tear, was secondarily liable for damages to the scow.

* * *

LIENS for repairs, supplies, or other necessaries furnished to a vessel, are entitled to priority over a common-law mortgage, under the ship mortgage act, which act destroys any distinction between home and foreign ports, said the court in the case of LITTLE CHARLEY, 31 F. (2d) 120. Furthermore, all liens of the same class, accruing within the same year, are entitled to share equally in the proceeds in the registry from the sale of the vessel, and are prior to liens accruing in any preceding year.

* * *

THE fishing vessel, COMMONWEALTH (case reported in 31 F. (2d) 142), was well constructed, was equipped according to the accepted standards for such vessels, was in charge of an experienced master, and was fully outfitted with the appliances for extinguishing fires, giving distress signals, and otherwise meeting emergencies that might reasonably be contemplated on the seas. "The owners' duty," said the court, "did not require them to provide a vessel of fireproof construction, or to adopt all the latest appliances, or the best safety devices. The equipment and appliances need only be what is reasonably safe for the purpose. This duty is satisfied if a reasonably staunch and fit vessel is provided, sufficiently equipped for the uses to which the vessel is to be put."

* * *

IN THE case of BUCKLEIGH, 31 F. (2d) 241, it appears that though the ship named could not get her true bearings in a dense fog, she went on at full speed, practically relying only on dead reckoning to shape her course. In the circumstances, said the court, she should have proceeded more slowly by the aid of accurate soundings taken with a deliberation that was impossible when going at high speed, and if, as seems to have been the case, she did not know her position, she should have anchored until the fog abated and she could navigate safely. Her navigation was negligent.

* * *

THE liberty clauses of a bill of lading, providing that a ship shall have liberty to deviate for the purpose of saving life or property and with liberty to call at intermediate ports, does not excuse the failure to make the vessel seaworthy for the entire voyage. This clause is not understood to permit a call which is not customarily a port of call for the vessel. The clause does not release the ship from performance of any of her ordinary duties in preparing for the voyage, nor does it authorize the ship to sail voluntarily from the port of departure with a shortage of coal, and create the necessity for calling at intermediate ports not mentioned in the bill of lading and contrary to the customary course of the voyage.—CALEDONIER, 31 F. (2d 257.

* * *

THERE is such an obligation upon a seaman to obey the orders of his superiors that he cannot have the freedom of action which lies at the base of the doctrine of assumption of risk as applied to workmen on land. It was held, therefore, in the case of Masjulis v. United States shipping board emergency fleet corporation, 31 F. (2d) 284, that a seaman does not assume the risk of using a rope under orders, notwithstanding his objection to its sufficiency, rather than assume the risk of disobedience.

* * *

BOTH parties to the case of Morrow Steamship Co. v. Superior Water, Light & Power Co., 31 F. (2d) 486, were held at fault for the collision of a steamer owned by the first-named with a cable belonging to the latter undergoing repairs. the former because the steamer failed to delay her turning movement until the power company's employes could clear the cable from the channel, and the power company for leaving its employes with inefficient equipment to properly keep the channel clear.

* * *

PROVISION in a bill of lading that the carrier shall not be liable for any claim for loss or damage, unless notice of such claim is given before removal of goods from carrier's custody and control, is not unreasonable, and a consignee not giving such notice is not entitled to recover, notwithstanding a notation of damage on the receipt for shipment.—T. D. Duche & Sons v. Lloyd Mediterraneo, 31 F. (2d) 496.

* * *

THE maritime law is not so exclusive as to prevent recovery under the workmen's compensation acts of the states in all cases of accident on navigable waters, it was said in the case of Employers' Liability Assurance Corp. Ltd., v. Cook, 31 F. (2d) 497; the rules of the maritime law may be modified by state statutes providing compensation for employes, where such statutes concern purely local matters and work no material prejudice to the maritime law.

* * *

WHEN a charter party is for a term of "about six months," or other stated period, the use of the word "about" is interpreted as signifying an intention to allow the charterer a reasonable leeway in respect to the date on which the vessel shall be surrendered. It is a recognition, based on the necessities of practical business, that her voyages cannot be planned so accurately as to bring her home on an exact date, and that the parties have contemplated the possibility of a reasonable shortening or lengthening of the stated term. Hence, if a voyage terminate in a port of redelivery before the end of the stated term, the charterer may require the vessel to make another "reasonable" voyage, even though it is certain to overlap the stated term. If, however, the time remaining before the end of the stated term is so short as to render another voyage "unreasonable," then the vessel may be surrendered by the charterer, or withdrawn by the owner, thus creating an underlap. Where the charterer is privileged to make a voyage which will result in an overlap, and actually makes it, he must pay hire at the charter rate until redelivery.—Britain Steamship Co. Ltd., v. Munson Steamship line, 31 F. (2d) 530.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	520	2,236,677	537	2,387,932
October	564	2,591,207	561	2,561,403
September	577	2,642,897	567	2,548,764
August	584	2,537,306	626	2,775,730
July	580	2,648,419	588	2,582,929
June	575	2,511,671	582	2,582,929
May	605	2,612.925	640	2,782,012
**April	**626**	**2,677,963**	**606**	**2,547,409**
March	576	2,428,002	599	2,587,030
February, 1929	534	2,345,973	550	2,391,154

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	80	222,026	48	133,872
October	99	262,305	62	154,401
September	107	282,105	61	145,895
August	110	271,857	54	120,595
July	120	321,726	70	188,269
June	97	254,811	61	140,065
May	126	343,548	75	191,192
**April	**118**	**318,240**	**76**	**194,158**
March	117	309,233	81	203,080
February, 1929	98	263,790	56	163,324

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	101	332,269	67	221,318
October	95	310,386	56	196,590
September	139	387,061	106	265,839
August	139	387,061	106	265,839
July	151	376,620	109	327,487
June	135	309,662	103	268,270
May	139	343,990	113	286,147
April	125	328,493	87	221,533
March, ...	90	305,532	59	209,077
February, 1929	96	289,629	58	196,264

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	26	51,231	26	50,475
October	25	54,402	25	56,022
September	30	58,497	30	64,559
August	32	59,299	31	58,111
July	31	55,932	31	53,761
June	29	49,060	28	47,961
May	24	39,080	25	39,830
April	20	45,922	21	48,999
March	15	36,185	15	38,415
February, 1929	19	46,400	17	46,121

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	10	38,203	6	22,371
October	6	20,741	8	32,974
September	9	38,226	5	23,339
August	6	24,438	6	25,315
July	12	38,408	9	29,585
June	11	40,920	7	31,040
May	11	39,061	5	18,506
April	5	20,267	5	17,898
March	5	19.121	5	21,902
February, 1929	2	5,891	4	17,323

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	34	129,809	65	234,575
October	39	148,172	59	221,007
September	33	129,576	52	191,302
August	45	166,207	65	229,834
July	42	151,702	54	198,109
June	30	109,084	47	170,643
May	26	98,630	48	172.196
April	36	136,793	47	169,257
March	45	170.528	64	232,651
February, 1929	35	137,304	48	181,425

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	132	438,274	137	446,120
October	138	450,603	146	463,723
September	117	374,893	108	355,532
August	141	444,315	150	466,464
July	160	499,292	158	485,913
June	135	430,355	134	427,138
May	155	478,043	155	465,843
April	158	471,851	156	465,710
March, ...	131	401,217	138	426,539
February, 1929	127	397,147	132	410,667

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	39	50,600	79	204,216
October	32	87,466	79	209,997
September	27	67,040	74	189,010
August	32	86,983	95	256,104
July	32	74,562	97	220,215
June	23	39,983	78	160,520
May	29	80,599	89	228,221
April	20	54,399	73	215,664
March	22	55,442	84	217,780
February, 1929	20	55,902	58	155,238

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	10	22,938	10	18,750
October	12	20,268	8	19,134
September	17	36,618	13	23,731
August	18	45,422	10	15,617
July	12	21,338	12	22,111
June	14	21,699	16	35,889
May	12	24,974	12	26,010
April	15	33,734	13	27,662
March	20	25,950	16	21,897
February, 1929	17	27,851	9	13,422

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	84	97,555	83	97,217
October	74	88,850	75	88,853
September	55	64,464	59	72,321
August	60	70,851	60	68,913
July	72	84,674	67	80,233
June	68	81,920	68	78,980
May	99	110,911	100	110,658
April	79	77,934	75	77,672
March	77	82,370	76	96,935
February, 1929	84	104,667	73	90,947

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	107	231,376	111	259,712
October	123	304,950	119	294,276
September	91	208,323	83	213,660
August	96	233,785	83	193,379
July	110	267,053	109	264,552
June	97	204,219	98	218,437
May	89	211,519	75	168,343
April	102	213,941	77	174,116
March	102	220,251	105	264,084
February, 1929	85	202,594	69	164,847

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	68	278,207	73	306,493
October	72	293,569	68	277,041
September	46	203,192	47	203,236
August	62	258,910	63	263,569
July	64	259,303	62	252,021
June	48	199,237	56	233,867
May	51	216,463	53	221,564
April	62	264,744	61	254,647
March	57	234,394	59	248,901
February, 1929	53	222,462	55	225,789

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
October, 1929	244	681,983	261	713,490
September	257	684,203	260	698,665
August	272	726,363	273	721,024
July	279	712,324	288	741,716
June	277	708,089	273	711,898
May	289	758,671	277	717,581
April	294	751,444	278	708,155
March	283	773,515	298	517,632
February	248	682,052	249	675,432
January, 1929	273	710,969	282	744,078

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net. tonnage	—Clearances— No. ships	Net tonnage
April, 1929	24	62,976	26	62,467
March	14	37,470	18	46,087
February	26	78,237	26	66,648
January	23	54,709	25	57,589
December	20	46,569	17	43,041
November	22	56,983	22	50,043
October	24	59,136	26	61,673
September	21	60,956	22	54,537
August	24	62,574	26	63,874
July, 1928	26	59,204	27	61,976

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929.....	28	68,030	108	332,315
October	36	88,056	118	385,367
September	47	131,512	101	323,955
August	37	87,502	74	275,017
July	36	72,793	87	259,450
June	35	75,614	78	243,391
May	37	79,121	79	220,456
April	36	82,330	93	294,062
March	33	62,486	77	221,143
February	37	96,127	81	256,077
January, 1929	45	133,396	106	347,297

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1929....	225	676,209	215	664,661
September	259	621,704	225	605,808
August	204	583,568	185	554,520
July	203	705,042	169	620,250
June	186	574,459	159	582,247
May	167	604,274	224	597,519
April	175	546,939	184	650,172
March	177	572,573	180	523,807
January, 1929	193	581,857	191	536,504

San Francisco

(Exclusive of Domestic)

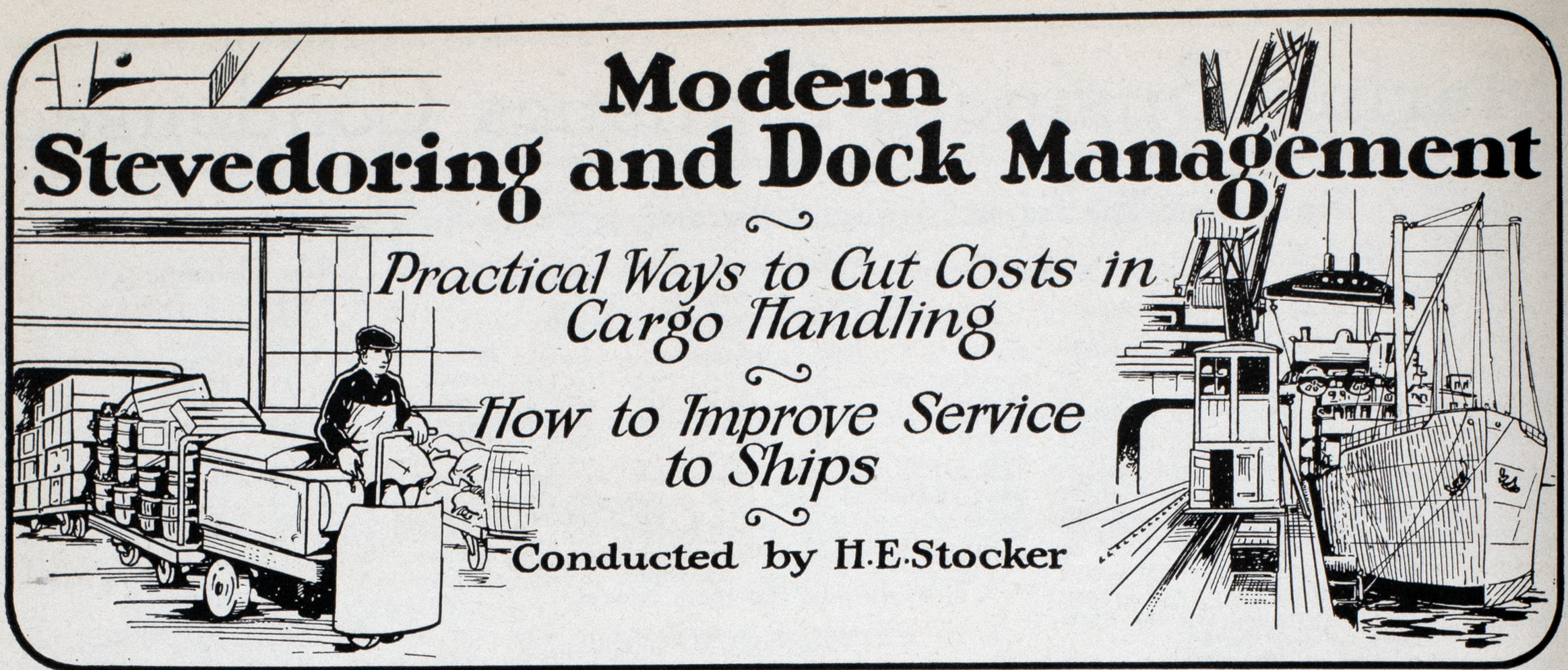
Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November 1929....	161	620,878	143	597,803
October	179	696,620	164	667,367
September	151	563,770	134	559,772
August	196	723,330	168	669,499
July	173	680,770	153	621,762
June	167	643,580	147	584,361
May	179	643,864	165	613,836
April	173	673,174	153	606,246
March	176	655,851	174	692,407
February, 1929	153	603,008	130	484,085

Port Arthur

(Including Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
May, 1929	22	76,344	26	87,941
April	21	79,267	23	81,991
March	25	76,152	27	81,778
February	16	53,310	21	68,705
January	22	68,758	24	76,496
December	21	65,710	14	43,776
November	23	71,313	23	69,425
October	19	58,857	19	58,686
September	22	73,785	24	79,696
August, 1928	25	78,765	23	72,389

Note: The figures given in this table are for direct entrances and clear ances. Additional vessels in foreign trade enter and clear from and to other American ports after original entry and before final departure. At the port of Philadelphia, for instance, additional vessels in the foreign trade in this category were 69 of 239,976 net tons entered and 73 of 252,152 net tons cleared for the month of November.



Play Fair with Your Stevedore

Co-operate in Improving Conditions Under Which He Must Operate —The Shipowner Should Share Savings Due to Better Efficiency

By H. E. Stocker

CRITICISM has been directed at stevedoring organizations, both company and outside organizations. The company stevedore has in many instances been criticized because of excessive costs and slow dispatch of ships, and because of lack of progressiveness. The outside stevedore has been criticized for his questionable methods, his narrow viewpoint and also because of his lack of progressiveness.

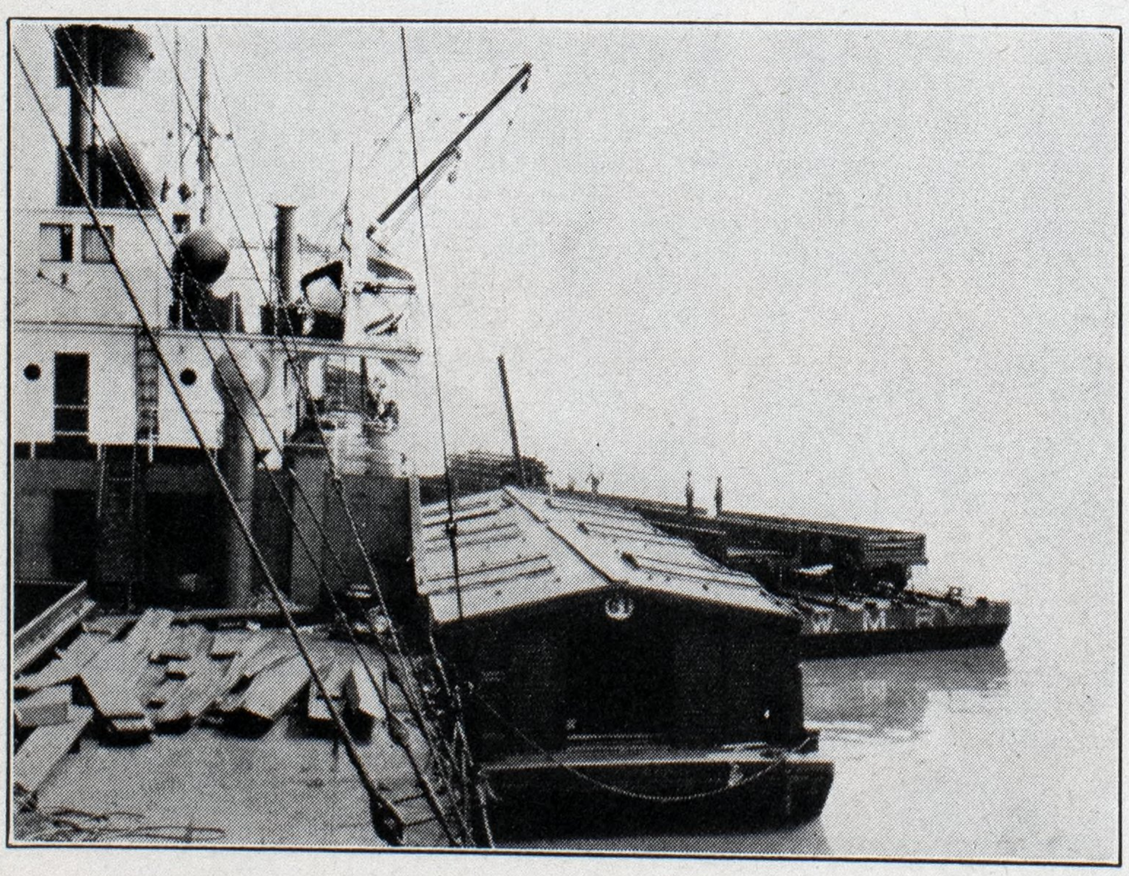
To play fair with your stevedore, whether a company or an outside stevedore, get the facts about the action or operation before criticising. Company stevedores defend their excessive costs and slow dispatch of ships and lack of progressiveness by stating that conditions are "different" on their dock, "different" than on the dock of a company using an outside stevedore. Before telling the stevedore how wrong he is, get the facts on the relative conditions on his dock and the dock of a company using an outside stevedore. The reasons for the poorer efficiency will be made clear by an intelligent analysis of the methods and equipment used.

One terminal may be small, may have bad floors and may be congested with street trucks and with cargo. These conditions would reduce efficiency but would not explain away big differences in costs per ton, or in tons per hatch hour. The answer is usually found in poor supervision, small sling-loads, excessive and unnecessary handling of cargo, and a general lack of mechanical equipment, as well as bad floors and congested docks.

If a company stevedore is unprogressive, get the facts of the conditions in the organization before criticizing him. When a stevedore develops a good idea, a superior often claims credit for it with the management. After being fooled in that way a few times, the stevedore keeps his ideas to himself. Again, if the stevedore does offer good ideas, the executives do not encourage his initiative, rather, as one of my friends so ably expressed it, their attitude seems to be, "Please go away and let me sleep."

Outside stevedores have often resorted to methods that were not right in getting business, in keeping it and in doing the job. In this connection, however, concerning the choice between company stevedores and outside stevedores, there is only one proper position to take and that is to do business with trustworthy men.

The narrow viewpoint of many outside stevedores, with their consequent lack of progressiveness, is due largely to lack of proper incentives, which are always a part of the "one best way" to get a job done efficiently. Their unprogressiveness can also be blamed to a large degree on the shipping companies. The attitude of ship owners is, more than any other factor, responsible for the unsatisfactory conditions that exist between outside



Cluttered decks are unsafe. Violating good safety principles indicates a wrong viewpoint or poor supervision

stevedoring companies and shipping companies. Shipping companies will sign short term contracts only. The stevedore cannot risk large expenditures for equipment on short term contracts because he is uncertain concerning the use he will get out of such equipment. If a stevedore puts in equipment or otherwise reduces his costs, very often the shipping company forces his rates down, thereby largely destroying the incentive for further economies.

The same fundamental principles of organization that apply in other industries, apply in stevedoring. The author has studied organizations in many industries during the past ten years and in that time has built up or reorganized six organizations. The striking thing has been, not the differences, but the similarity between the fundamentals of the problem and the fundamental principles which are followed or should be followed in solving these problems. Two principles of organization are, first, the necessity for incentives, and second, the importance of delegating authority. The weakness of the present arrangement between stevedores and shipping companies is the lack of incentive to stimulate the maximum effort in reducing costs and in improving service. A properly worked system of incentive or bonus is regarded as vital to the maximum success of a modern business concern. No industry is better managed than the automobile industry and it is therefore interesting to note that more than in any other industry a greater percentage of the employes in this industry are on some sort of an incentive basis. A man will do more physically and mentally if he has the proper incentive. He will spend less time and energy in fighting the boss and in cursing the job and the company. Experience in the well managed organizations of every industry has proved this. "Make it pay to work well." The excellent results in manufacturing that have followed properly worked out bonus systems give an indication of what can be accomplished by following the same method in the shipping industry.

Experiments are being worked out for solving this problem. Consideration is being given to the possibility of a bonus system of some character so that a stevedore will have a direct incentive to load or discharge a ship in the shortest possible time and handle the cargo without damage. MARINE REVIEW is studying this problem and hopes to be able to contribute facts and ideas which may be helpful in finding the solution.

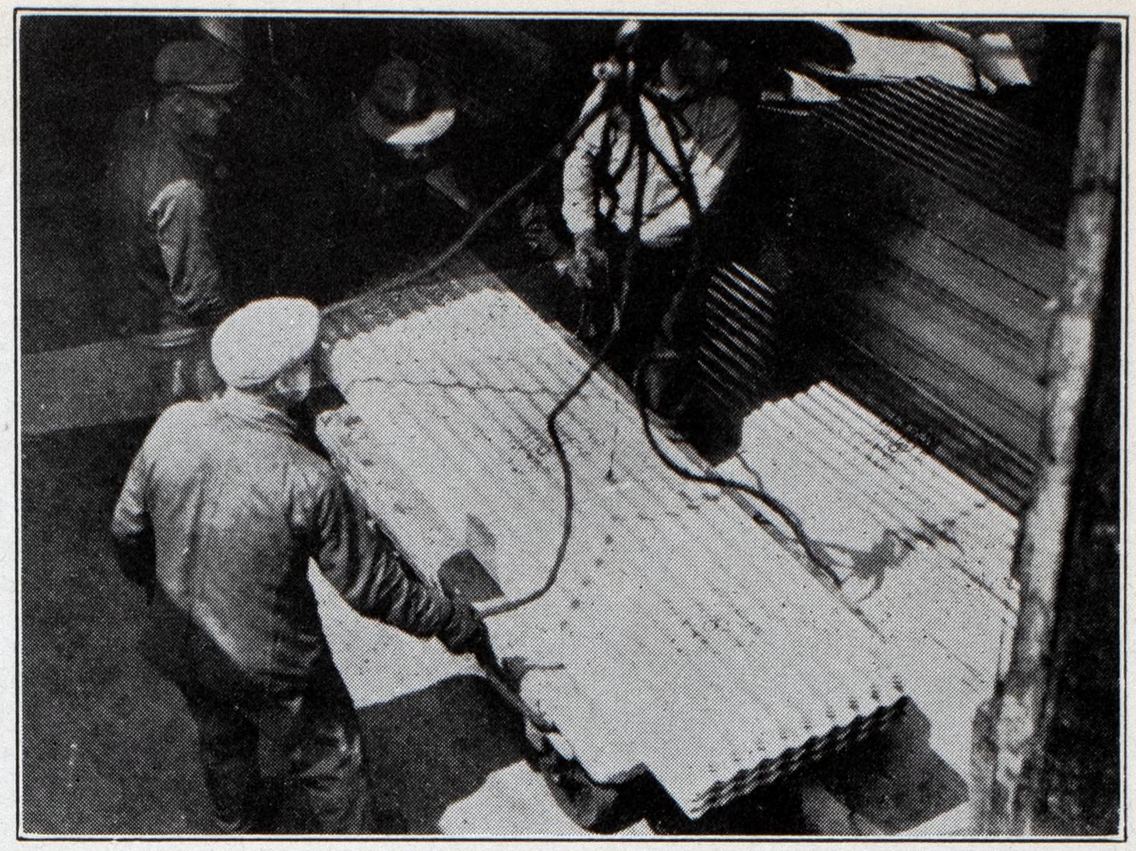
Delegation of authority is important. It is particularly important in a large organization. A stevedore, in spite of his intimate contact with the job, must often wait upon the decision of some one higher up in authority, and has to act upon that decision—even when at times he knows it to be wrong. This is particularly true of the stevedore at a distant port who must wait sometimes two or three days for a decision and is oftentimes forced to do the wrong thing. Of course, the executives base their decisions on what they believe to be facts. Good decisions are the result of getting facts. A good man in intimate touch with the details of his job is in a better position to decide the questions involving the facts than the higher executives who are far removed from the job as well as the facts. Therefore, if authority were properly delegated, decisions would be based on "real" facts and would be more likely to be correct.

When authority is not properly delegated, the lag between the origin of the question and its decision is so great that in many cases, by the time a decision is reached, the conditions have so changed that the decision is worthless. The result is not only the loss of the time of a number of men, but additional expense and loss of business because of failure to act quickly. A subordinate with proper authority spends more time in action and less time in playing politics.

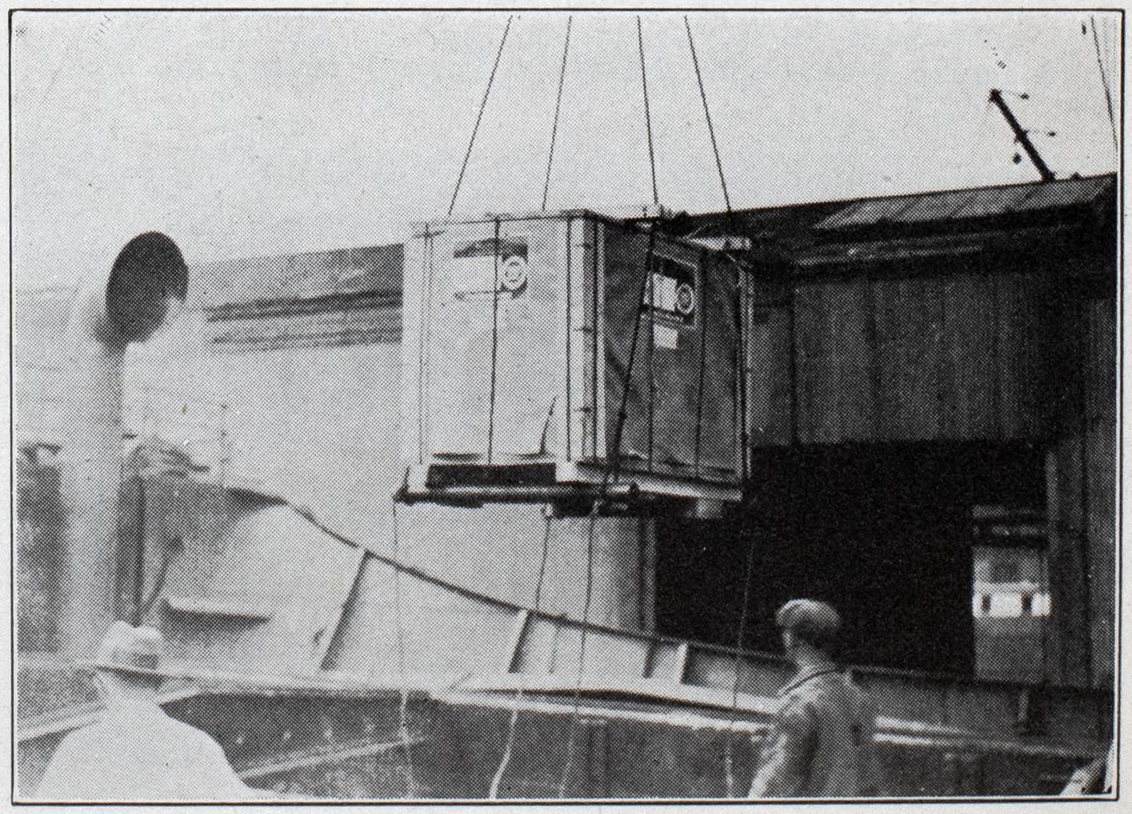
In a broad business sense it is not playing fair with your stevedore when you have the work done by your own organization, even though an honest and competent outside stevedore will contract to do it at a lower cost. Company pride is sometimes the reason for this, but a good business man gets more pride out of net profits. It is good business and it is playing the game fairly to give the business to the man who will do the best job for the least cost. The question of employing outside stevedores or having a company stevedoring department do the work, is one of net profit.

A shipping organization should not be wedded to any particular form of organization, but should always be open-minded enough to face the facts. A shipping company may have a sufficient volume of business to warrant a stevedoring department but that does not mean that an outside stevedore cannot handle the business at a lower cost.

Some company organizations are successful in operating at low costs and give good service in every way by being fortunate or wise in having a high caliber executive with the nec-

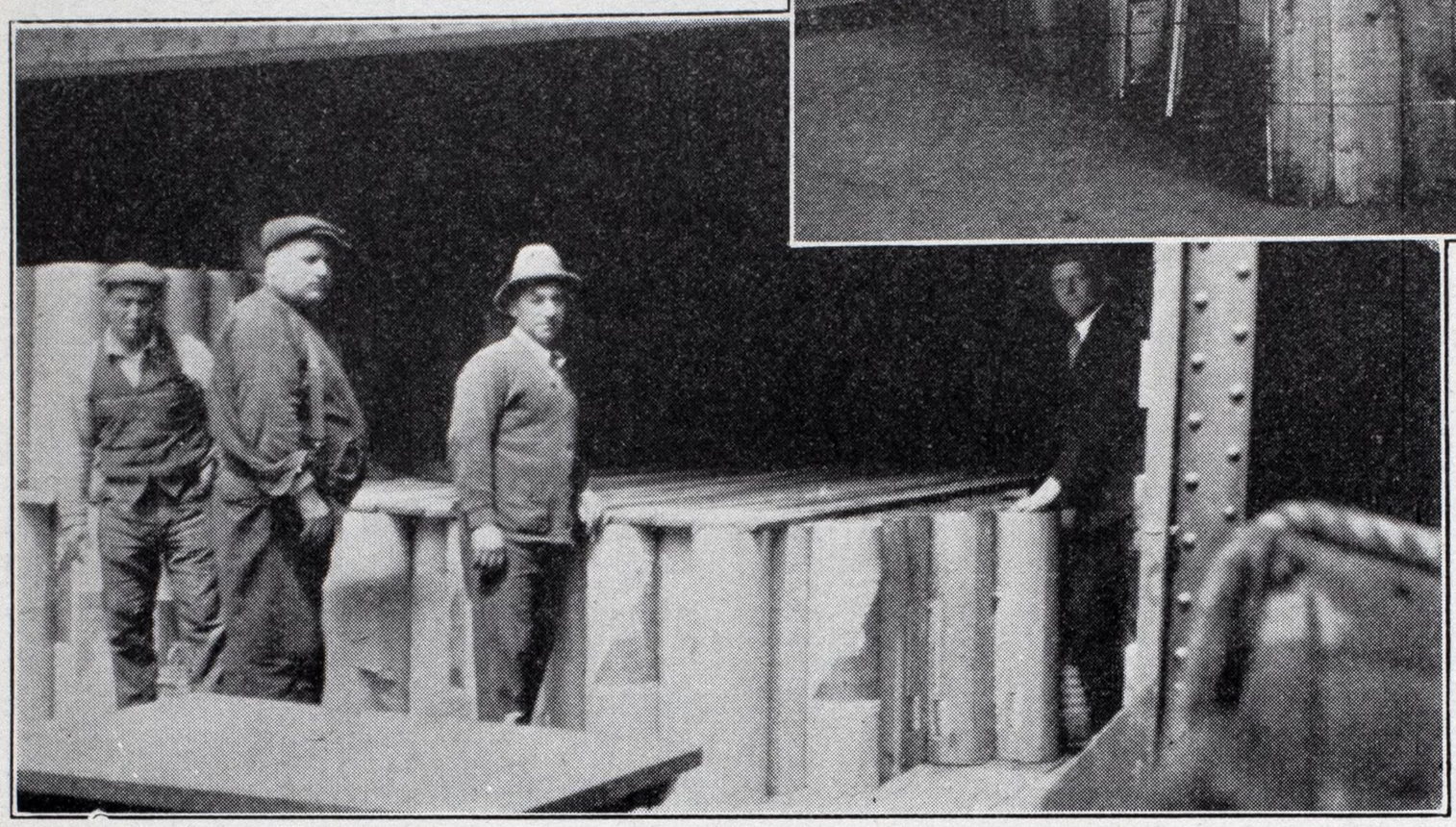


The size of the slingload is a good indication of the efficiency of the organization

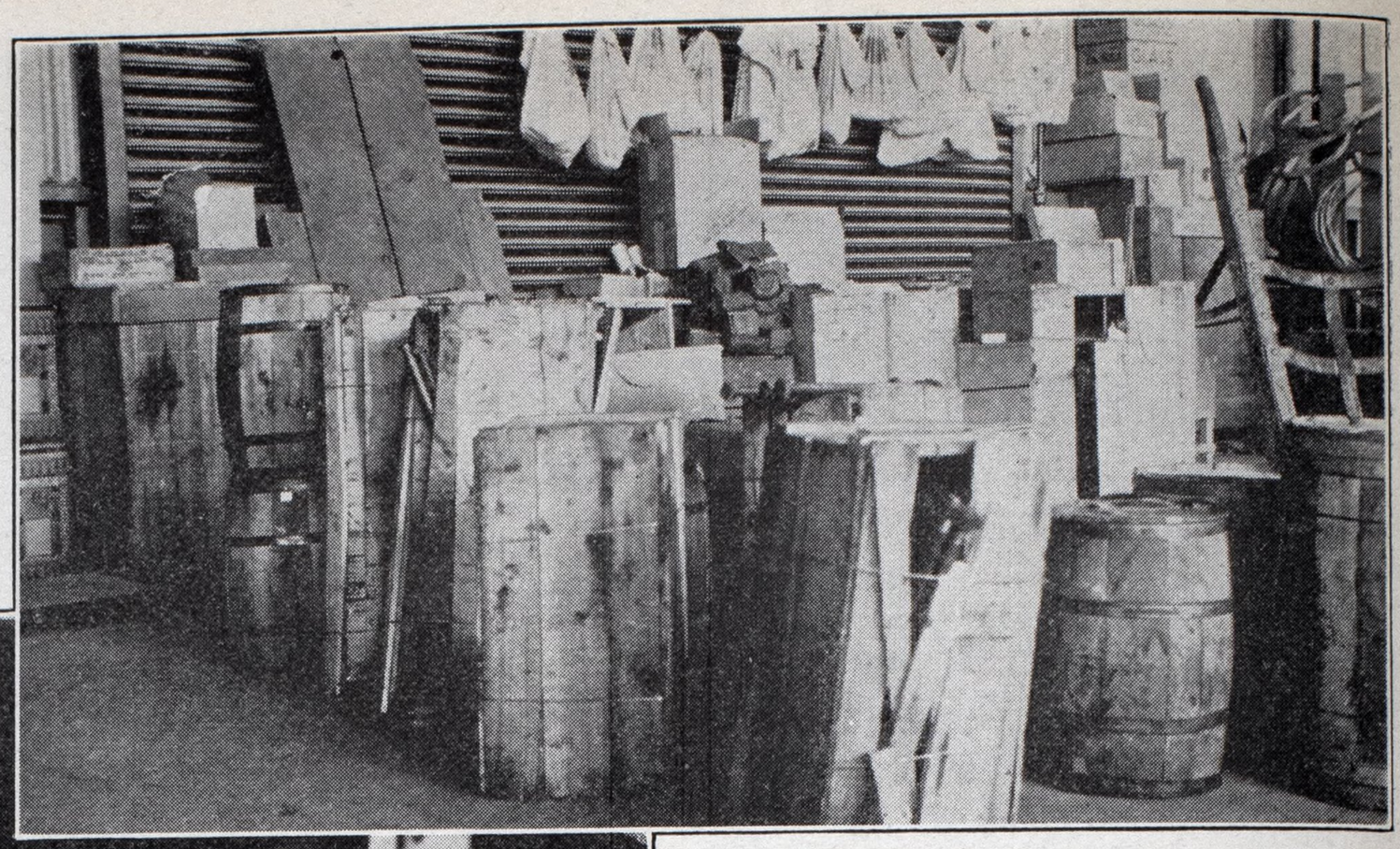


New and profitable ideas such as shipping on skids are retarded by an unprogressive viewpoint

essary authority to get the job done right. This kind of an executive understands and applies the fundamental principles of business organizations. He delegates authority to his assistants. By treating his men fairly and in other ways giving them incentive to do their best, he gets the maximum results. Such an executive keeps his mind open to new ideas, equipment, etc., and so is able to handle cargo to the best advantage at all times.



Conscientious attention to the handling and storage of roofing paper eliminated claims



Poor supervision caused the damage to this cargo

On the other hand, in some company stevedoring organizations one finds executives who have allowed their organizations to develop a lackness, an inefficiency that runs costs up and causes delays to ships, claims, and other losses. This type executive has not the incentive to efficiency that the outside stevedore has because he has no fear of losing a contract at its expiration. Claims are more readily absorbed because the company can afford it. An outside stevedore must avoid claims by increased care in handling and stowing cargo.

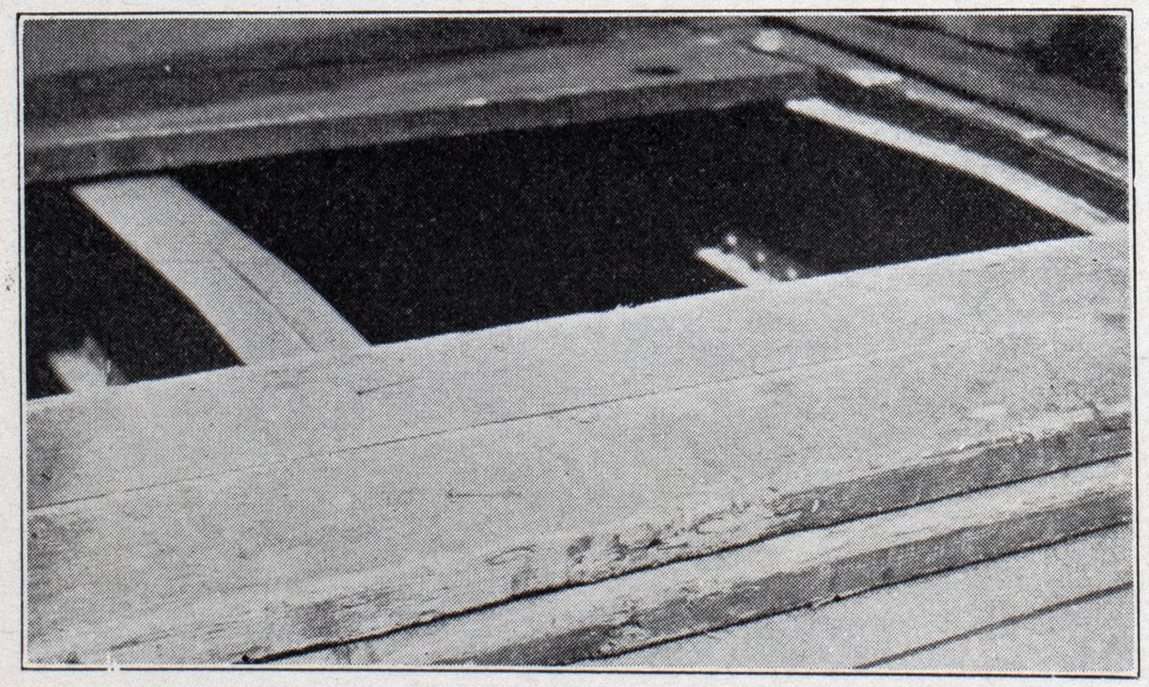
If the service of a high calibre executive can be secured by contracting with him as an outside stevedore, that is better than having the work done by a far less competent man. The greater range of experience of outside stevedores gives them a distinct advantage in handling the work to secure the maximum results for the shipping company. The steamship owner should encourage the stevedore to work more efficiently.

Improve Ventilation for Freight Ships

By Kristen Tvede

THE VESTRIS disaster called the attention of the civilized world in a dramatic and terrible way to the fact that in the year 1928 a great passenger ship belonging to a great steamship company could sink on one of the ocean highways, and scores of lives be lost.

So much has been written of late, about making ships safe and foolproof that one would almost think there was no more to be said about the subject. This is almost the case as far as passenger ships are concerned, but as a trampshipman, I cannot but notice the apparent lack of interest and attention given the important trampship and trampship trade. When reading the draft of the convention of the international conference on safety of life at sea, one is given the impression that the few improvements or regulations proposed by this conference that could apply to the trampship were made in order to make it more safe for the passenger ship and not for the trampship. This is all well and good. The passengers and crews of the fast and expensive passenger ships should be as safe at sea as it is possible to make them, but what about the trampship and her crew of about forty men and the valuable cargo carried? Are they not worthy of some international attention?



Ventilating a Ship's Hold by Opening the Hatches Is a Make Shift

While most of the rules in force are good, some are bad and antiquated, if not ridiculous, and almost an insult to ordinary intelligence. One of the rules in force is one requiring a certain number of ventilators for

each cargo space. The number and size to be according to the size of the cargo space they are supposed to ventilate. These ventilators are lightly constructed of, say ⅛-inch to 1/16-inch metal, as a rule galvanized steel plates, and placed on the fore and after decks exposed to all kinds of weather with the result that in bad weather they have to be unshipped and the seats covered as a rule, with a plug and two canvas covers. The cargo holds are from then on not provided with any ventilation whatsoever although rules and regulations call for the cargo spaces to be ventilated. Is it meant to ventilate in good weather only?

From the standpoint of proper carriage of cargo, ventilation is essential, in fact without proper ventilation it is almost hopeless to attempt to bring almost any cargo from one port to another without sweating, heat or other damage. The S. S. "X" of about 8800 tons took a cargo of grain from New Orleans to Rotterdam in January, 1921, and the marine protest filed by the master on arrival in Rotterdam, noted that the weather had been bad most of the time during the voyage and that the ventilators had been unshipped and the ventilator seats covered all of this time, preventing fresh air getting into the cargo spaces and circulating, thereby causing excessive damage to the cargo by sweating and heat.

Cargo Hold Ventilation Essential

The next year the same vessel carried another cargo of grain from New Orleans to Rotterdam with the same result, and in this year she is carrying general cargo with the same result, no change has been made to her ventilating system. The S. S. "W," a brand new up-to-date cargo steamer, carried on her maiden voyage last year in February, a cargo of grain from a United States Atlantic coast port to Rotterdam. Her master's protest noted bad weather as usual, ventilators unshipped as usual, and cargo severely damaged by sweating as usual. There are thousands of examples of damage to cargo all of which could have been and can be avoided if proper ventilation were provided in bad as well as good weather.

The shipowner admits that damage is caused by lack of ventilation and that again is caused by having to unship the ventilators in bad weather. Naval architects will admit that proper and sufficient ventilation can be provided for in good as well as bad weather at little additional cost to the shipowner, if contracted for when the ship is built. Changes can also be made in ships already built that will

Poor Ventilation Causes Condensation of Moisture on Metal Cargoes—Rusting Results

pay for themselves in a comparatively short time.

In passing from the tropics to a colder area, as done in the intercoastal trade, the proper course is to ventilate the cargo vigorously. With the antiquated system of ventilation found on most of the ships in this trade, this is impossible in bad weather. When the ventilators are closed, the humidity of the holds rise, for then a closed space is being continually cooled from without. It is with falling temperatures that the closing of ventilators becomes dangerous because of the increasing humidity of the holds, with consequent risk of condensation of moisture on the ship's sides and under the deck and its dripping back on to cargo.

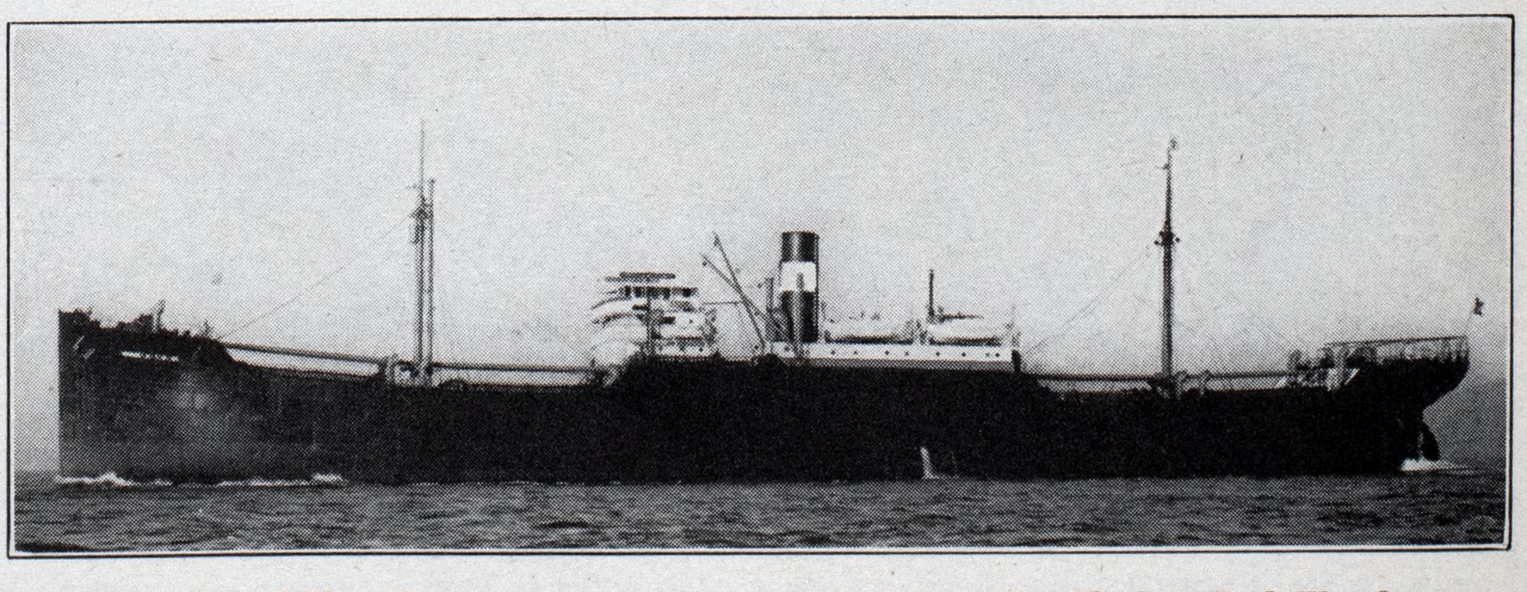
At one of the big coal docks in England it is prohibited to take ventilators off and cover the ventilator seats while the ship is loading, or loaded with coal ready to go to sea, for fear of explosion. In other words, the authorities admit the danger to the ship if the cargo spaces are not at all times properly ventilated, still they permit, the shipowner permits, and the underwriters permit a ship to sail on a voyage with a cargo of coal, for instance, and they know for certain that the ventilators will be off more or less, ventilator seats covered, more or less, and the cargo spaces without ventilation for days and even weeks. This is not logical, but it happens daily.

Some years ago the writer heard of an explosion that took place in number four cargo hold of a ship loaded with coal and ready to go to sea from one of the big coal docks in England. The chief officer apparently thinking there was no more danger of an explosion while the ship was laying in port than there was at sea, had removed the ventilators to that cargo space and had covered the ventilator seats. The ship was not badly damaged, but a few of the sailors were burned and sent to the hospital. The damage to the ship was soon repaired and the ship proceeded to sea without any change in her ventilator system. That system was according to rules and regulations in force then and at present time.

Danger from Explosive Gases

As a rule, after a serious accident at sea, an investigation is conducted. If the accident is an explosion caused by insufficient ventilation, the ship is repaired and as quickly as possible made ready for another explosion from the same source or cause. The cause for the explosion is not remedied. The ventilation system of the ship will not be changed because it is according to the rules and regulations now in force. Ventilation is essential and vital. Further, a ship with certain cargoes on board is not seaworthy unless proper continuous ventilation is provided on account of poisonous, inflammable and explosive gases forming in the holds, yet in practically every trampship or cargo liner afloat today, new or old, ventilation to the cargo spaces is only provided for in good weather. In the new fast and expensive cargo liners being built today the ventilating system is the same as it was 20 to 30

(*Continued on Page* 52)



This Type of Ship Has a Ventilating System Which Does Not Work in Bad Weather

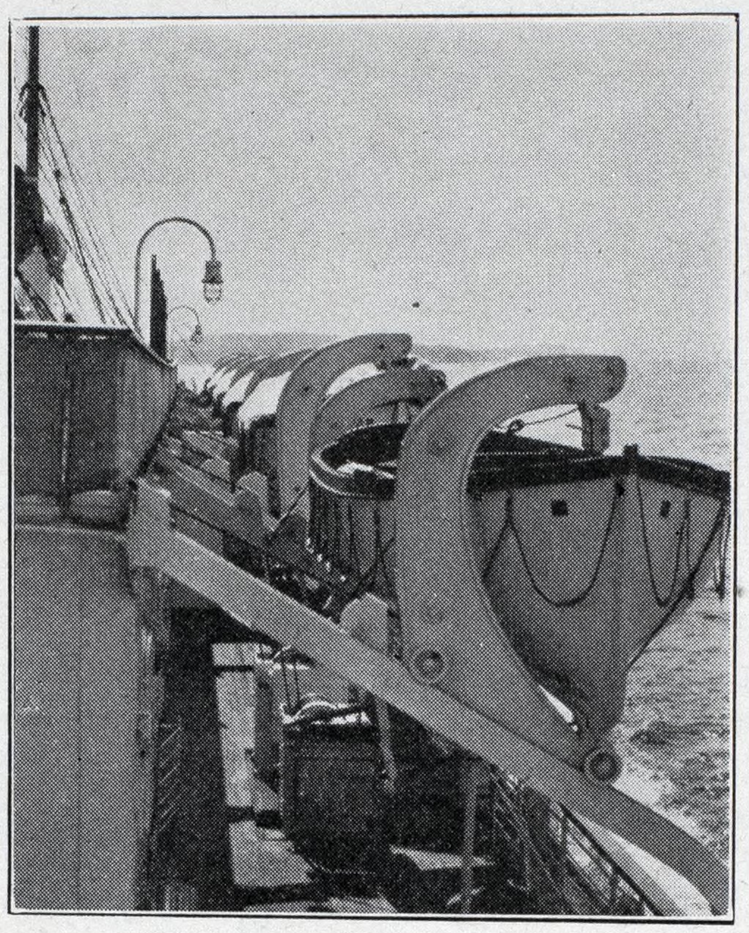
Equipment Used Afloat and Ashore

With Gravity Davit One Man Can Lower Large Lifeboat—Safe and Efficient Tongs—Electric Steerer with Double Drive

JUDGING by the acceptance of the Welin-MacLachlan gravity davit for a number of the newest and largest ocean liners no development in lifeboat equipment in recent years has been of such outstanding significance. It works by gravity. No power is necessary to swing the boats clear of the side of the ship and this applies also to a certain degree of list. This davit has been designed to handle any size of single lifeboat or nested lifeboats and in fact the size of lifeboats may now be increased. The accompanying illustrations show clearly the general features. It is especially adapted for application not only to new vessels but to older vessels that are being reconditioned or re-equipped.

In England the board of trade has given its approval in the case of this gravity davit to handle a super maximum lifeboat, accommodating up to 110 persons. This is of utmost importance as it makes it possible to accommodate, as the regulations require, all souls on board without going to the extremes found necessary with older equipment where lifeboats, must of necessity, be smaller. In addition the boat deck is entirely clear of boats and can be used by passengers affording unrestricted space and view.

Many interesting features are characteristic of the gravity davit. As operation is entirely by gravity, it functions positively and quickly in an emergency. Control or braking of the operation of lowering the lifeboat

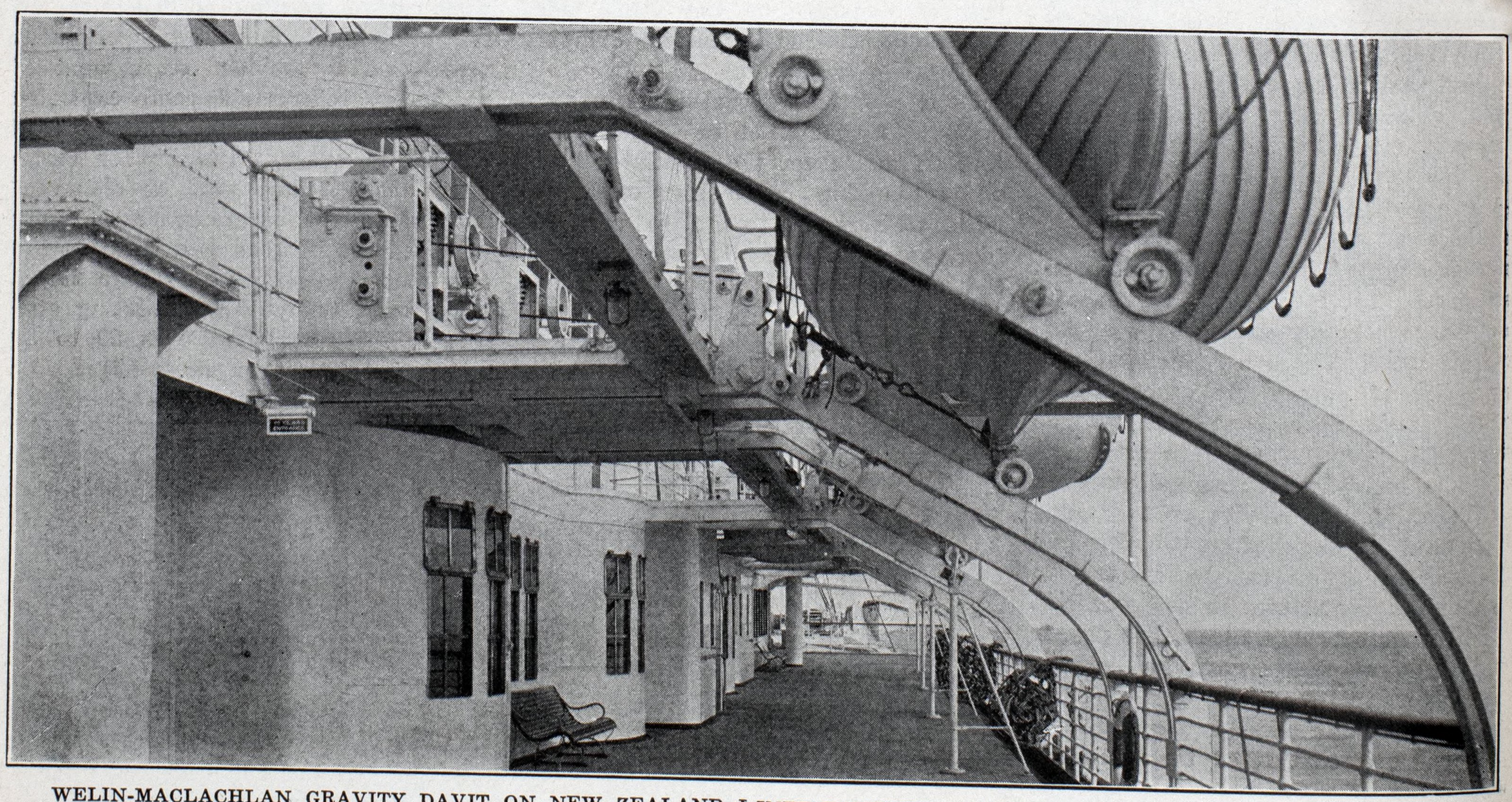


WELIN-MACLACHLAN GRAVITY DAVIT ON THE LINER DUCHESS OF BEDFORD

after it has been swung clear of the side is done by means of the worm shaft on the winch. The operator simply has to raise the counter weight on the winch to release the lifeboat and it can be stopped at any place by merely letting the counter weight drop. One man can easily put out a lifeboat, including the releasing gripes, in from 30 to 60 seconds, the speed being dependent upon the operator of the counterweight. Another feature of great importance is that the lifeboat can be positively launched by its own gravity against a list of 15 degrees and it can be launched with the help of man power to a list of 30 degrees, the amount of power depending upon the list.

The possibility of handling extremely large lifeboats is of definite advantage on a large modern liner. Such a liner may have a complement all told of 2400 persons. Under the older lifeboat arrangement if there were 20 sets of davits, each serving lifeboats of 60-person capacity, then 1200 persons or 50 per cent of the total complement could be launched in the first set of boats. With the same vessel, fitted with super lifeboats of 110-person capacity and which one man can lower over the side if the gravity type of davit is used, no less than 2200 persons, representing 92 per cent of the total complement can be got overboard in the first lifeboats.

With this type of davit the lifeboat is stowed on cradles mounted on rollers which move over parallel trackways laid at right angles to the ship's side and carried down to the embarkation deck. These parallel trackways actually form ship's side

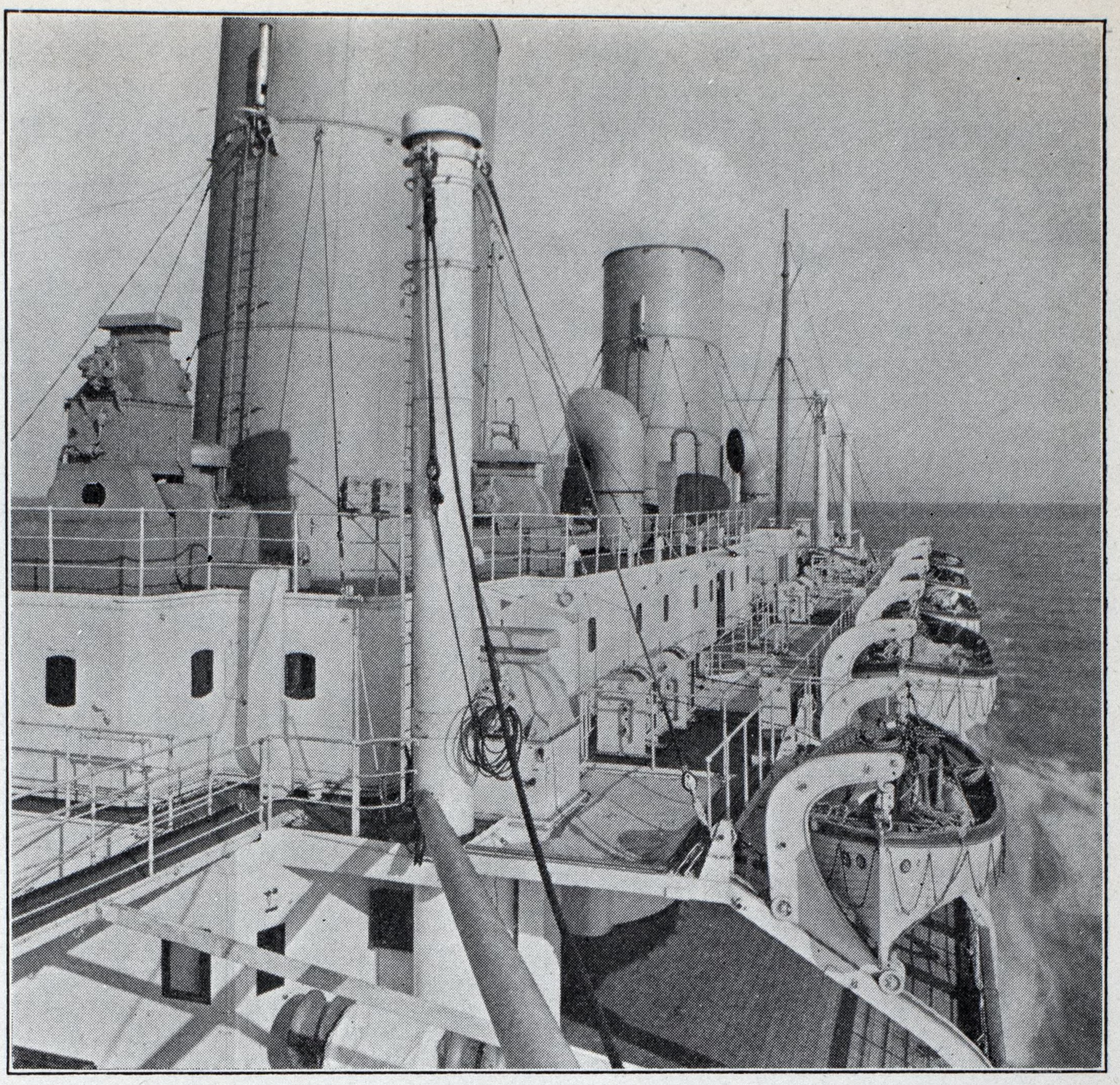


WELIN-MACLACHLAN GRAVITY DAVIT ON NEW ZEALAND LINER RANGITIKI—BOAT DECK WITH WINCHES ON HOUSE TOP

deck supports. Extending inboard over the deck the trackways are given a declivity of 30 degrees so that the boat may be definitely launched against any list up to that angle. The falls which are of single wire rope are led to and reeved on a simple winch designed to operate them simultaneously. The winches are in some cases located on the boat deck and in other instances on top of the deck houses. The latter system is much more preferable if the construction of the vessel will allow for the additional weight on top of the deck houses. If the winches are placed on top, as shown in one of the accompanying illustrations, the deck is absolutely clear except for keel chocks and in the United States the chock is not required if steel lifeboats are used. Another important feature of the gravity davit is that the lifeboat automatically comes to a stop at the embarkation deck. This is done by means of a pendant, one end of which is secured to the cradle or arm, and the other end to the ball weight just above the hooking point.

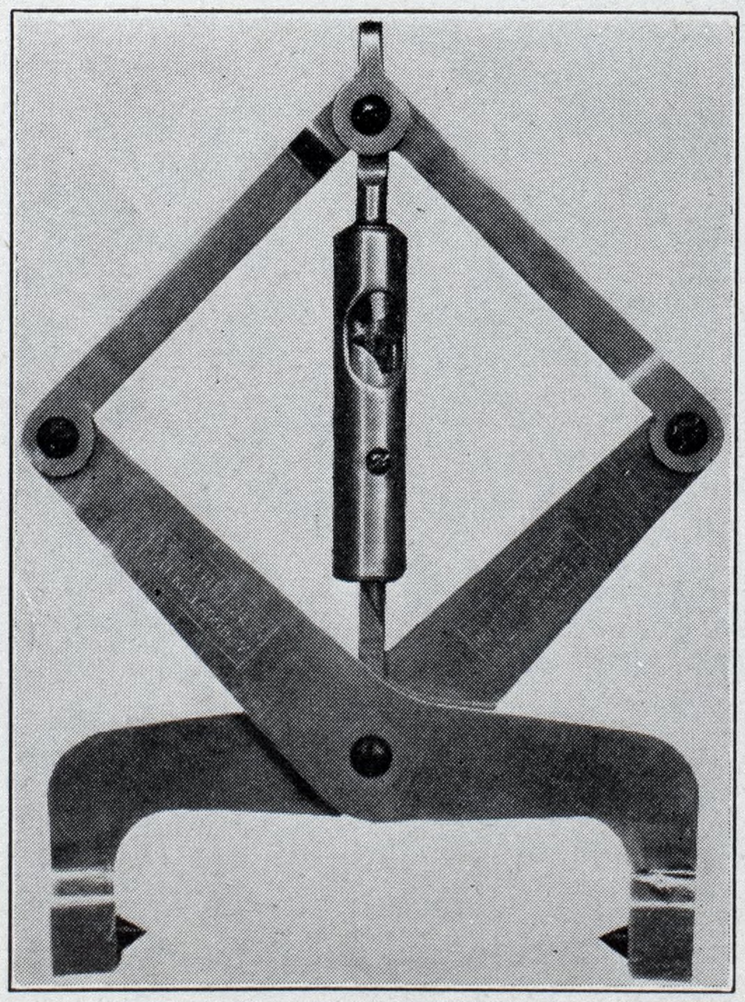
When launching the brake lever is lifted and the cradles and boat move together under their own weight until the cradles reach the stopper. The cradles remain at rest on the stoppers and the boat comes automatically alongside the embarkation deck, irrespective of list. When the lifeboat has its full complement on board the brake lever is again lifted and the boat continues to the water. In handling nested lifeboats the operation is exactly the same. Both boats are over the side together until the cradles reach the stoppers, when the outer and larger boat is lowered away first accommodating, say, 70 per cent of the entire complement in the first set of lifeboats. In the meantime the inner boat remains suspended to the davit head. The falls of single wire rope are easily recovered for the second boat by a quick return gear on the davit winch.

Due to the simplicity of the operation of the gravity davit the ship's officers are no longer dependent on the crew in an emergency, as they alone can lower all the boats on both sides of the ship irrespective of list. Since the gravity davits are entirely within the length of the lifeboats there is a considerable saving in fore and aft deck space so that six boats may be stowed on one side as against five boats in the same length with the ordinary type of mechanical davit. Also deck stresses are completely eliminated. All of the weight of the lifeboat and load comes entirely on the davit structure itself which is communicated to the side plating of the vessel and the upper point of attachment which may be independently supported or by the deck structure.



ANOTHER VIEW OF THE RANGITIKI SHOWING THE CLEAR DECK SPACE BELOW BOATS

The Welin-Maclachlan gravity davit is manufactured in the United States by the Welin Davit & Boat Corp., Long Island City, N. Y. and this company is at the present time equipping the new Grace liner SANTA CLARA building at New York Shipbuilding Co., and the two new Ward liners building at Newport News Shipbuilding & Dry Dock Co., with this type of gravity davit. The proposed lifeboat capacities in each case are to be much larger than has been the custom heretofore.



AUTOMATIC SAFETY TONG GIVING POSITIVE AND MAXIMUM GRIPPING ACTION

Automatic Safety Tong Finds Wide Use

THE old style lifting tongs still much in use require as a rule, in addition to the craneman, the services of a number of ground men for guiding, attaching and release; then there are certain semi-automatic tongs with special means of release, all more or less cumbersome. Their manipulation involves, especially in the case of heavy or hot materials, very strenuous work and frequent mishaps and accidents.

The patented automatic safety tongs shown in the accompanying illustration eliminate these drawbacks. Suspended from any kind of hoist by a single rope, they are manipulated by means of this rope only and by the craneman alone without any auxiliary men, power or appliance. The tongs are normally in the open position; a single down and up movement grips the load and the subsequent down and up movement releases it, leaving the tongs again in the open position ready for gripping. All except possibly one groundman can be eliminated; he may in some cases have to

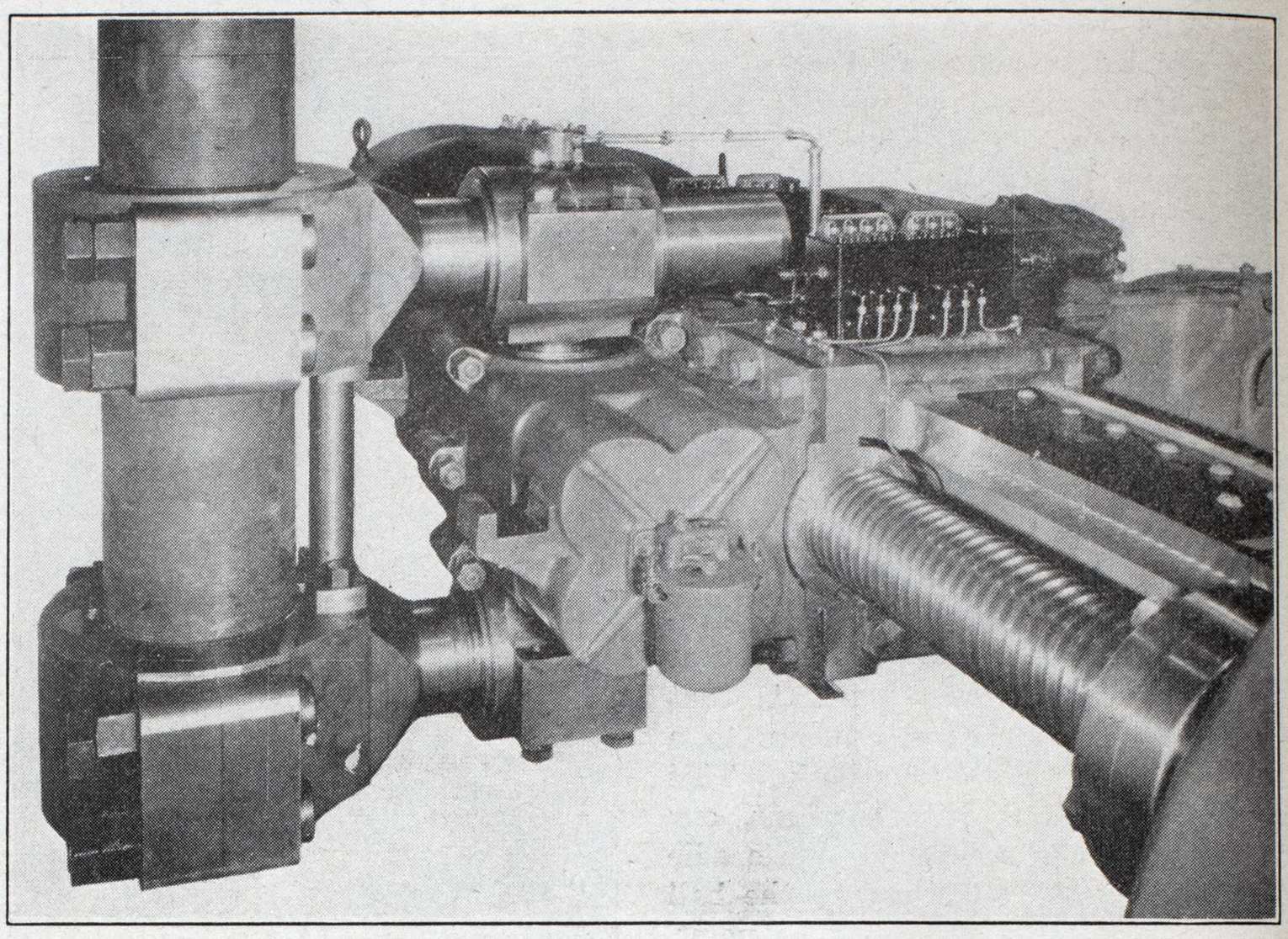
prepare the load so the tongs have access to it, but he does not manipulate or handle the tongs except in cramped quarters where he guides them.

The device is positive in action, light in weight, yet rugged, and of the utmost simplicity as the latch contains only two moving parts. No springs or counterweights are used and no lubrication attention or adjustment is required. The tongs are at present used in the hardest kind of service for hot and cold steel ingots, molds, slabs, and also for handling large bales of various kinds. They are suitable for the safe and economic handling of large heavy and fairly even size materials. It is known as the Gellert automatic safety tong and is manufactured by the Heppenstall Forge & Knife Co., Pittsburgh.

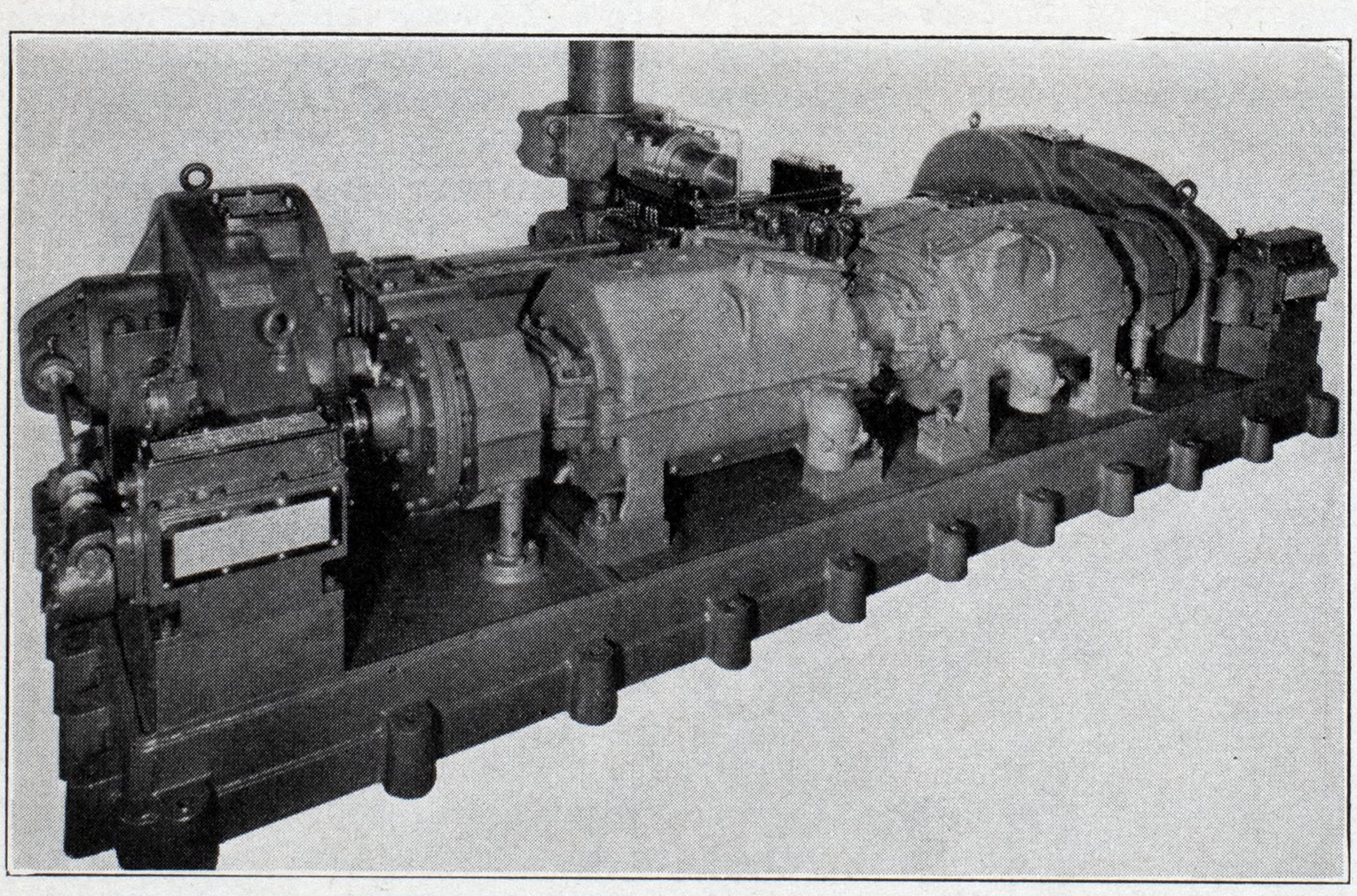
Electric Steering Gear Embodies New Ideas

NO SHIPS in the world are more up-to-date in their machinery than the carferries CITY OF SAGINAW 31, recently completed and described in the December issue of MARINE REVIEW, and the CITY OF FLINT 32, now under construction. The steering gear for both of these vessels was designed and built by the Benson Electric Co., Superior, Wis. It is an exceptionally well designed and constructed unit of equipment, embodying a number of practical ideas. The gear is of the transverse, double tiller type with duplicate electric drive of two 75-horsepower each direct current geared motors of Westinghouse make and with dual electrical control.

It will be seen from the accompanying illustrations that a substantial steel crosshead, actuated by a screw shaft, moves athwartships and is supported by a steel guide bar. The drive is through self-oiling bronze nuts mounted on the crosshead and traveling on the screw shaft. The screw shaft carries no load and is subjected to no bending moment. It is only in tension or compression. The threads are bathed in oil while revolving.



THE TWO TILLER ARMS AND CROSSHEAD MECHANISM OF THE DUAL DRIVE BENSON ELECTRIC STEERING GEAR SHOWN COMPLETE IN THE OTHER VIEW



TRANSVERSE TYPE ELECTRIC DRIVE STEERING GEAR BUILT BY THE BENSON ELECTRIC CO. FOR THE PERE MARQUETTE CAR FERRIES CITY OF SAGINAW 31 AND CITY OF FLINT 32

Connection is made between the crosshead and the rudderstock by means of two forged steel tiller arms, which travel in and out through bronze bearings in a forged steel crosslink which turns with them in a bronze bearing in the crosshead. This bearing is an integral part of a smaller crosshead which floats back and forth on ways or guides inside of the main crosshead chamber. The floating bearing or smaller crosshead is clamped in a central position in the main crosshead between sixteen large steel coil springs, eight on either side. As the crosshead travels toward hard-over position and the torque on the rudder builds up, the springs compress approximately one-third at full speed. Should the rudder strike bottom or other obstruction, the springs compress down to stops which are placed to eliminate any possibility of crushing them and at this point the back-up control is automatically set in operation, reversing the motor and allowing the rudder to give way until the load on it is reduced to a safe point. The gear them resumes its operation and will take the normal position indicated by the steering wheel. This safety feature is important, as it provides protection to the rudder and stock as well as to the gear itself.

At the midship's point the application of power to the tiller arms is at a comparatively small radius, but as the rudder is swung toward hard-over this radius increases rapidly, the speed going down and the torque up, as required. The advantage of this feature is the increase in torque in proportion to the power input. All gears and pinions are completely enclosed in semisteel housings and run in a bath of oil. All bearings are flooded with oil by means of gravity

(*Continued on Page* 66)

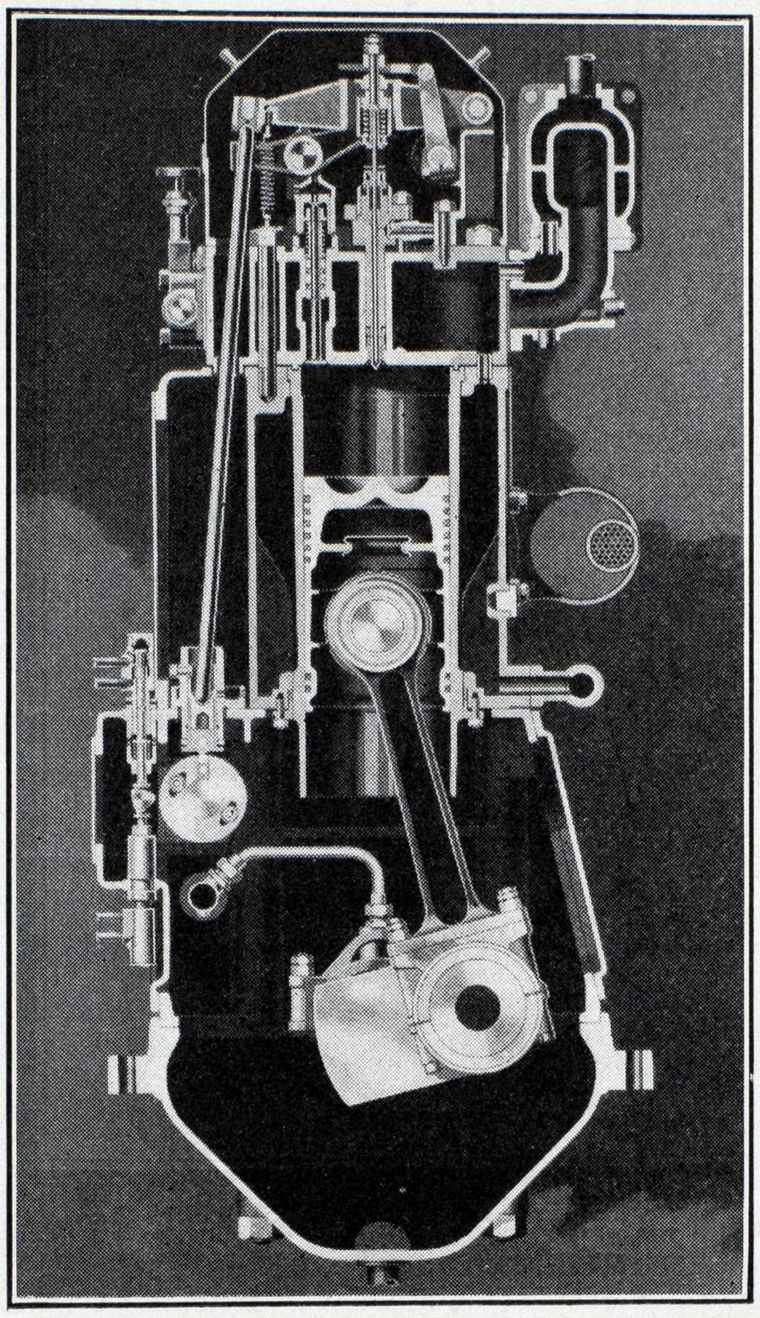
Build New Type Engines

THIS engine gives marine power users a plant which fills the need for a reliable light weight, multi-cylinder, moderately high-speed diesel engine.

These engines are built in both six and eight- cylinder models and embody the latest features in proven engineering design, both in this country and abroad, and like all Bessemers, are of the four-cycle, single-acting trunk piston type. They have a bore of 9 inches and a stroke of 12 inches, the six-cylinder engine developing 200-300 horsepower at 400-600 revolutions per minute, while the eight-cylinder engine develops 270-400 horsepower at 400-600 revolutions per minute. Special alloy pistons are used where speeds higher than 450 revolutions per minute are required, permitting engine speeds up to 600 revolutions per minute with unusual smoothness. The engines have proved so smooth and vibrationless in their block tests that they have been run at full speed without bolting to their foundations.

All accessories are completely built-in, including fuel and lubricating oil pumps, circulating water pumps, fuel transfer and lubricating oil transfer pumps and bilge pumps, all of the plunger type; compressor, duplex fuel and lubricating oil strainers and lubricating oil cooler. This building-in of all accessories makes each engine a perfectly balanced, complete unit, compact, symmetrical and self-contained.

The crankshaft measures 6⅜ inches in diameter in both main and pins, forming a rigid backbone which makes for complete freedom from criticals at all speeds as well as for exceptionally long bearing life. Provision has been made for quick, easy access to all moving parts, making it simple to adjust or replace them when necessary.



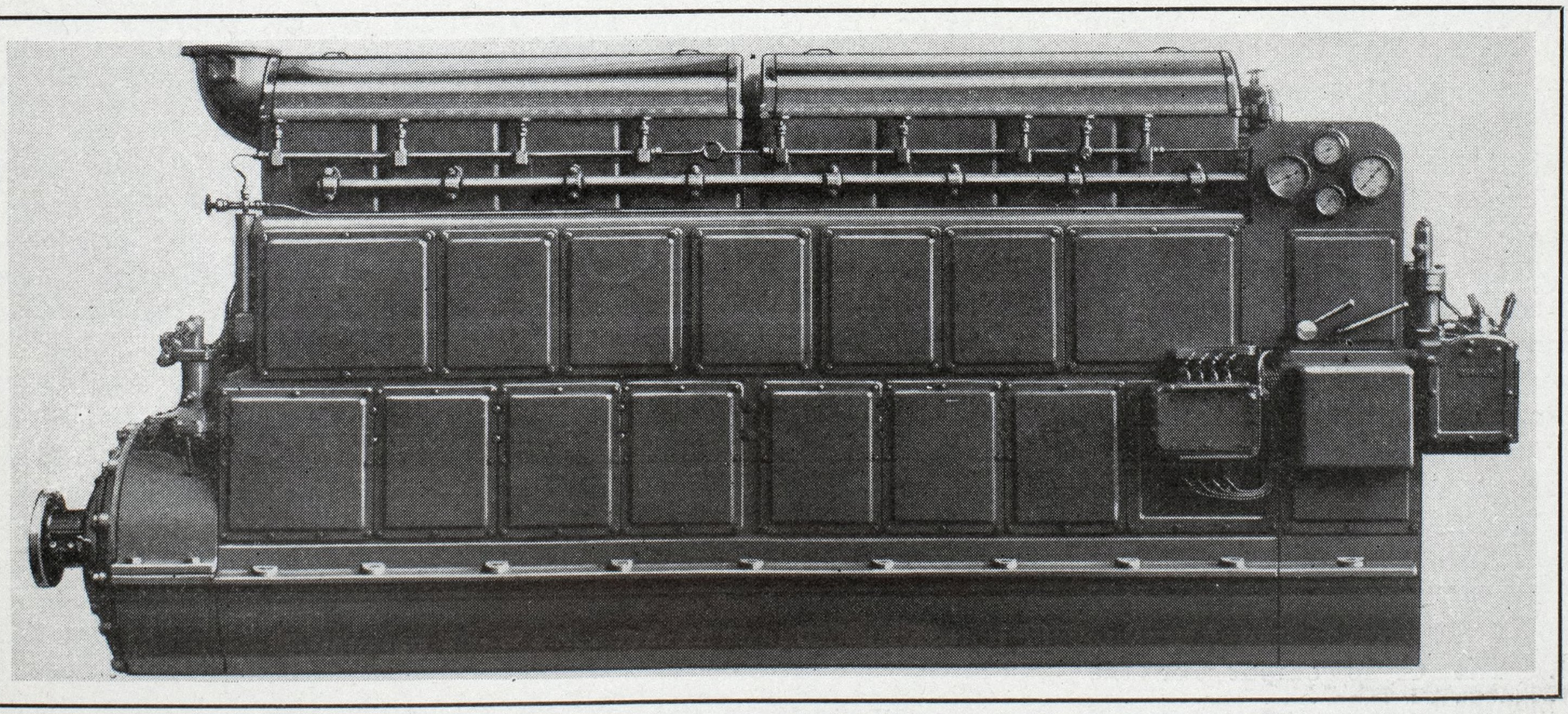
Cross Section of New Diesel Engine

The base consists of a one-piece, extra-strong semisteel casting, so designed that it can be made of aluminum where still lighter weight is desired. The centerframe, which acts as a distance piece between waterbox and base, is also made of semisteel, but can be made of aluminum if desired. The waterbox is of semisteel, fitted with removablie liners which are ground to an automobile cylinder finish. These liners are fitted at the top with copper asbestos gaskets and at the bottom with rubber grommets and stuffing box.

Cylinder heads are of a special design, cast individually of nickel semisteel, are light in weight and easy to remove. When completely assembled, the cylinder heads consist of air starting valve, fuel injector, and exhaust and intake valves. The exhaust valves are in one piece, fabricated from the finest heat-resisting metal available, while the intake valves, also in one piece, are of a special steel for this purpose.

Lubrication of these engines is by means of a plunger pressure pump and lubricating oil transfer pump, both of which are built in the engine. Fuel injection, as in all Bessemer diesels, is of the mechanical or airless type, pressure being furnished by built-in plunger type injection pump. The fuel injection system also includes duplex fuel oil strainers, pressure regulator, fuel oil manifold and accumulator and shut-off valve to each injector.

Starting and reversing are by means of compressed air which is furnished by a compressor built into the engine. A maximum air pressure of 250 pounds is required for either starting or reversing this new marine diesel engine.



Operating Side of a New Type FP Eight Cylinder Bessemer Marine Diesel Engine

Heavy Loss on Lakes

(*Continued from Page* 38)

Only one steel carrier, the M. J. BARTELME, 3400 gross tons, was lost in 1928, although 14 vessels of all classes were wrecked. The loss of life totaled 16 persons.

In contrast, 1927 was a bad year. Six steel freighters were lost, five being of Canadian registry, and one American. The toll in lives reached 24.

Many Lives and Ships Lost

Old records show that the Great Lakes have claimed the lives of more than 4000 men, women and children, and about 15,000 vessels, including those withdrawn from service due to old age and disability, in the last 75 years.

Shipwrecks on the lakes have diminished, it is true, in recent years, but once more a season has written a heavy score of disaster, showing that man, with his modern aids to navigation, his powerful lights, alert coast guard crews and radio beacons has still far to go before he has truly conquered the inland seas. The importance of properly designed, staunch, well found ships, and adequate skill and vigilance on the part of the men who load and sail them, has again been demonstrated.

The Inter-Collegiate Alumni Extension Service has designated the United States lines and the American Merchant lines as its official lines for the transportation of members to and from Europe. The Service embraces the alumni organizations of 103 colleges and universities including the women's colleges and will take an active part in supporting efforts to build up the American merchant marine. The management of the United States lines has assigned the steamship AMERICA, of which Capt. George Fried, of rescue fame, is the commander, as the intercollegiate flagship for the sailings next year from New York on June 4, July 2 and July 30.

The Cooper-Bessemer diesel factory at Grove City, Pa., has 38 diesel marine engines on the assembly line at present and is busy keeping up with orders.

New Passenger Offices

The organization of a new and enlarged passenger department with centrally located offices in San Francisco and Los Angeles, was announced Dec. 14 by H. S. Scott, president of the General Steamship Corp. The personnel now engaged in handling passengers at the company's freight office in San Francisco will be transferred to the new quarters, which are to be located at 215 Sutter street and will be opened to the public about the middle of January. Similar steps will also be taken shortly with regard to the company's passenger organization in Los Angeles.

Ventilating Freighters

(*Continued from Page* 47)

years ago.

Why not call a conference of experts to demand that provision be made for the ventilation of cargo in bad weather. I feel confident that the problem of modernization of the trampship and the trampship trade can be solved in a practical way which will result in a saving to the shipowner, ships and underwriter. It is much better for the interested parties to come together and agree on improvements in the transportation of goods at sea before the government steps in with rules that may be impractical, and therefore a new burden for the already greatly burdened industry to carry. We need an international conference on the safety of transporting goods at sea—and this is urgently needed. It might be called an international conference on marine transportation.

The shipping board has authorized the sale of the steamer CAPE HENRY to the A. H. Bull Steamship Co. for $81,000 cash. The purchaser plans to operate the vessel either in its regular line between New York and Porto Rico, or between Baltimore and Gulf ports. The Cape Henry is a steel cargo steamer of 7371 deadweight tons, equipped with reciprocating engines and Scotch coal burning boilers and is designed to steam at 10 knots.

What the British Are Doing

SHIPBUILDING activity in Britain is variable. On the north east coast some useful orders have been booked within the last month which have raised the hopes of shipbuilders in that area. But on the Clyde end-of-the-year dullness is marked. In South Wales the ship repairing companies are very busy owing to the long spell of rough weather which has been experienced.

In Scotland there were launched during November only 14 vessels aggregating 26,218 tons. Of these, 9 vessels of 18,648 tons were built on the Clyde, two of 5179 tons on the Forth, one of 1463 tons on the Tay and two of 829 tons in the Aberdeen district. The Clyde output for the eleven months of 1929 was 189 vessels of 477,161 tons compared with 180 vessels of 55,260 tons last year. The launchings in November were the lowest of the year. New orders are very scarce and do no go far in filling the many empty berths in Scotland. Among the contracts reported were two twin screw motor tankers each of 13,500 tons to be built by Robert Duncan & Co. Port Glasgow for Westfal Larsen & Co. of Bergen. Harland & Wolff Ltd. of Govan are to build two cargo steamers of 5000 and 6000 tons respectively for British firms and Napier & Miller Ltd., have the order for the hulls of two ferry steamers placed by the Levis Ferry Ltd., of Quebec.

* * *

SHIPBUILDING on the Tees has received an impetus as the result of the placing of orders for seven new ships with the Furness Shipbuilding Co. of Haverton Hill. The list is as follows: One 16,000-ton twin-screw diesel tanker for American owners which is a repeat order for a somewhat similar ship to the Calgarolite which was recently completed at the Furness yard for the same owners. One diesel electric vessel with self discharging gear of 3600 tons capacity for service on the Great Lakes; one ocean going tanker of 3000 tons capacity, and four 2800 tons steam driven tankers for service on the Great Lakes. All these vessels will be built of British steel and with one exception; the marine engines will be made by British engineers. The 16,000-ton oil tanker will be one of the biggest ships of its kind afloat. Work will be started on it immediately and it is due for completion by the end of 1930. It is expected there will be an increase early in that

year in the number of workers employed at the yards.

* * *

THE new steamer GLENDENE owned by the Glendene Shipping Co. Ltd., Cardiff, recently underwent successful trials off West Hartlepool. It was built by William Gray & Co. Ltd., and engined by the Central Marine Engine works of West Hartlepool. The weight is 7800 tons and the length 403 feet 6 inches. Special arrangements have been made with a view to rapid and economical handling of cargo, the distribution of winch power, and hatch area to hold capacity being the subject of particular consideration. A Tutin balanced reaction rudder is fitted. The machinery is of the triple expansion type the steam being obtained from three Scotch boilers fitted with a new type of fire grate. The combustion conditions obtained from these grates proved highly satisfactory and considerable economies are anticipated particularly when using low grade coals. The fire grates are made by J. &. J. Neal, of Glasgow, and have a semi-mechanical stoking effect with an arrangement for introducing secondary air to ensure complete combustion. The boilers, engines and pipe line are insulated with Newalls 85 per cent magnesia insulation, insuring maximum safety and efficiency.

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to December 18, 1929 on Future Loadings

NOTE: FREIGHT RATES STEADY WITH SLIGHT CHANGE

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo cu. ft.	General cargo 180 lbs.	††Finished steel	REMARKS Freight Offered
Liverpool	1s 6d	$0.65	$0.45	0.18	$0.50	$0.90	$8.00T***	Poor
London	1s 6d	0.65	0.45	0.18	0.50	0.90	8.00T***	Poor
Oslo	$0.11	0.45	0.50	0.30	0.42½	0.85	8.00T	Poor
Copenhagen	0.11	0.45	0.50	0.30	0.45	0.90	8.00T	Poor
xHamburg	0.08	0.35	0.45	0.19	0.50	0.90	10.00T	Fair
xBremen	0.09	0.45	0.45	0.21	0.50	0.90	10.00T	Fair to good
Rotterdam and Amsterdam	0.09	0.42½	0.45	0.19	0.45	0.80	9.50T	Poor
Antwerp	0.08	....	0.45	0.19	0.45	0.80	9.50T	Fair
Havre	0.10	0.37½	0.31	0.30	0.45	0.80	9.00T	Fair
Bordeaux	0.10	0.37½	0.31	0.30	0.45	0.80	9.00T	Fair
Barcelona	....	0.50	0.30	10.00 bags	—12.00T—		12.00T	Poor
Lisbon	....	0.65	0.45	8.00T bags	—23.00T—		8.00T	Fair
Marseilles	....	0.65	0.40	7.00bags	—23.00T—		8.00T	Fair
Genoa	0.12	14.25T	0.50	9.00	—23.00T—		11.50T	Fair
Naples	0.12	14.25T	0.50	9.00	—23.00T—		11 50T	Fair
Constantinople	0.27	20.00T	0.75	0.40½	—24.00T—		11.50T	Fair
Alexandria	....	20.00T	0.75	0.40½	—24.00T—		11.50T	Fair
Algiers	....	0.75	0.60	8.0T bags	—23.00T—		11.50T	Fair
***Dakar	....	20.40	....	18.60T	—27.60T—		13.80T	Fair
Capetown	....	18.00	....	13.00 per 2240 lbs.	20.00		20.00	Slow
Buenos Aires	....	22.00T	....	....	20.00 to 22.00T†		8.00 to 8.80T	Poor
**Rio de Janeiro	....	22.00T	....	....	30.00 to 22.00T†		7.00 to 7.70T†	Poor
Pernambuco	....	22.00T	....	9.00T	—22.00T—†		9.70T†	Poor
Havana	0.30*	0.50	....	0.30*	0.61	1.33	10.00	Poor
Vera Cruz	0.35	0.40	0.50	0.35	x		0.25 to 0.35	Poor
Valparaiso	....	1.07	....	0.70	....	....	10.00T	Fair
San Francisco	....	0.45 to 0.90	....	0.40 to 1.10	....	....	0.25 to 0.30	Very good
*Sydney	....	20.00	1.25	15.00	17.50 to 25.00		9.00 and 12.00	Poor
(x)Calcutta	....	....	0.60	....	—20.00T—		10.00T	Poor

From North Pacific Ports to	Lumber Per m. t.
San Francisco	$4.00 to 4.25
South California	4.00 to 4.50
Hawaiian Islands	9.00 to 10.00
New Zealand	16.00 to 18.00
Sydney	11.00 to 12.00
Melbourne-Adelaide	11.50 to 13.00
Peru-Chile	13.00 to 14.00
South Africa	17.00 to 20.00
Cuba	13.00 to 14.00
United Kingdom	52s 6d to 60s
Baltimore-Boston range	$10.00 to 11.00
Florida Range	15.00 to 16.00
Buenos Aires	16.00 to 20.00
South America — East Coast	15.00 to 20.00
South America — West Coast	13.00 to 14.00
Bhina	7.00 to 7.50
Japan	6.00 to 7.00
Japan (logs)	7.00 to 10.00

Flour and Wheat

U. K. and Continent (gross tons)	20s to 25s
Oriental Ports (net tons)	$3.00 to 4.50

T—Ton. ‡Per quarter of 480 lbs. †Landed. ††Heavy products limited in length. *Extra charge for wharfage.
**Plus $0.50 surcharge on all rates to Rio de Janeiro on account of congestion. ***Plus 15 per cent.
xNo general cargo rates to Vera Cruz.
*Flour to Sydney—$22.50. General cargo—$17.50 to $27.50 Finished steel—$9.50 and 12.50.
***Rates, effective at once, to Dakar, will be based on whether the company makes a contract. Rates without a contract will be about 20 percent higher. With a contract the same rates as last month apply.
(x)General cargo to Calcutta is $18 up to June 30. After June 30 it will be $20

NOTE: Lighterage rates on fuel in New York reduced from 6½ to 5½c per barrel. The coal strike in Britain is now settled and freight rates or bunker prices for coal or pig iron are again quoted.

General cargo rates to Havana change daily and are omitted for the time being.

Rates to Calcutta are subject to change without notice. Cotton goes only to Bombay. Landing charge of $2.00 per freight ton at Valparaiso.

Principal Rates To and From United Kingdom

	s	d
Grain, River Plate to United Kingdom	15	9
Coal, South Wales to Near East	9	3
Coal, United Kingdom to Buenos Aires	14	3
Manganese Ore, Poti to Philadelphia	$3.85	
Pig iron, United Kingdom to New York or Philadelphia	12	6
Iron ore, Bilbao to Cardiff	6	0
Iron ore, Huelva to Phila. or Balto	13	0

Bunker Prices

At New York

	Coal alongside per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Feb. 18, 1929	5.00@5.65	1.10	4.92
March 18	5.00@5.50	1.10	4.92
April 18	5.00@5.50	1.10	4.92
May 18	4.00@5.50	1.10	4.92
June 18	4.75@5.25	1.10	4.92
July 18	4.75@5.25	1.10	4.92
Aug. 18	4.75	1.10	4.92
Sept. 18	5.00@5.25	1.10	4.92
Oct. 18	5.00@5.25	1.10	4.92
Nov. 18	5.00@5.25	1.10	4.92
Dec. 18	5.00@5.25	1.10	4.92

At Philadelphia

	Coal trim. in bunk per ton	Fuel oil alongside per barrel	Diesel Eng. oil alongside per gallon
Feb. 18, 1929	5.00@5.65	1.05	4.88
March 18	5.00@5.50	....	4.88
April 18	5.00@5.50	1.05@1.10	5.12
May 18	5.00@5.50	1.05@1.10	5.12
June 18	4.90@5.30	1.05@1.10	5.12
July 18	4.90@5.25	1.10	4.88
Aug. 18	4.90@5.25	1.10	4.88
Sept. 18	4.90@5.25	1.10	4.88
Oct. 18	4.90@5.25	1.10	4.88
Nov. 18	4.90@5.25	1.10	4.88
Dec. 18	4.90@5.25	1.10	4.88

Other Ports

Boston, coal, per ton	$7.00
Boston, oil, f. a. s., per barrel	1.12
Hampton Roads, coal, per ton, f.o.b., piers	$4 50 to 4.75
Oct. 18 — Cardiff, coal, per ton	14s 3d
London, coal, per ton	—s —d
Antwerp, coal, per ton	21s 9d
Antwerp, Fuel oil, per ton	80s0d
Antwerp, Diesel oil, per ton	87s 6d
British ports, Fuel oil	67s 6d
British ports, Diesel oil	82s 6d

Up and Down the Great Lakes

U. S. Salvage Association—Lake Levels—Grain Storage Boats—New Ore and Coal Records—Enlarge Channel—Freight Companies Merge

THOUGH fully appreciative of the fine work carried on for years by R. Parry Jones in connection with the activities of the United States Salvage association on the Great Lakes, Capt. R. D. Gatewood, who recently became manager of the association, is recommending, after a personal survey of the situation in Cleveland and other lake ports, the opening of an office of the association in Cleveland in order to establish direct representation. In his visit to Cleveland, Captain Gatewood was accompanied by J. A. McKeown, chief surveyor.

Captain Gatewood outlined the general policies of the association to a representative group of lake shipping men in Cleveland on Dec. 2. The United States Salvage association, he explained, was set up in the interest of American underwriters, owners and ship repairers for the purpose of survey and appraisal of the hulls and engines of American vessels and that the association was operated for these interests in exactly the same way as the London Salvage association has operated for many years in the interest of corresponding English underwriters and owners. He pointed out that the personnel of the association was composed of carefully selected, highly qualified and experienced men, technically equipped to carry on the difficult work of ship survey.

It was pointed out that the work handled for American underwriters in recent years by R. Parry Jones had met with the general approval of the entire marine insurance world but that the interest of the American insurance companies, the total risks of which on the Lakes is now around $40,000,000 and expected to become larger, warranted direct representation on the Great Lakes. Guy Myers, for some time in charge of the United States Salvage association's Galveston office and who was present at the meeting, is to be in charge of the Cleveland office of the association, which it is expected will be the only independent office established for the time being at least. The association's office, it is expected, will be in operation for the season's opening next April. In view of the satisfactory service rendered in the past, survey work for the underwriters will continue to be handled by R. Parry Jones and surveyors of the American Bureau of Shipping, in the great majority of lake ports.

November Lake Levels

The United States Lake Survey reports the monthly mean stages of the Great Lakes for the month of November as follows:

Lakes	Feet above mean sea level
Superior	602.81
Michigan-Huron	581.14
St. Clair	575.68
Erie	572.83
Ontario	246.66

Lake Superior was 0.05 foot lower than in October and it was 0.46 foot lower than the November stage of a year ago. Lakes Michigan-Huron were 0.29 foot lower than in October and they were 0.53 foot higher than the November stage of a year ago. Lake Erie was 0.13 foot lower than in October and it was 1.10 feet higher than the November stage of a year ago, 1.42 feet above the average stage of November of the last ten years. Lake Ontario was 0.30 foot lower than in October and it was 0.99 foot higher than the November stage of a year ago, 1.59 feet above the average stage of November of the last ten years.

Steamer Chicago Sinks

According to reports, the steamer CHICAGO of the Great Lakes Transit Corp. fleet slid off Michipicoten Island and sank Dec. 19 in Lake Superior. The CHICAGO grounded on the island some six weeks ago, the crew having escaped. The information was brought into the Soo by the crew of the government light tender MURRAY STEWART. The former owners, having abandoned the vessel to the underwriters, had no direct interest in it. Approximately 400 tons of cargo was lightered prior to abandonment of the vessel.

Grain Boats in Storage

Eighty-nine vessels are wintering in Buffalo this year holding storage grain from lake ports. This number is five larger than that of storage boats tied up at Buffalo last year. In both 1927 and 1928 only 84 vessels tied up at this port with storage grain. In addition to the 89, which are holding grain from ports on the upper Lakes there are two other vessels which took on their cargoes at Buffalo, thus raising the total carriers in the storage fleet to 91. Although there are more vessels holding grain this year than before, actually less grain was moved down the Lakes during the past year than a year ago. Grain cargoes were fewer this year than for any year since 1920. The principal reason given is that the amount of export wheat has fallen off, since Europe is consuming more wheat from the Argentine than in former years. The winter fleet is to be unloaded as rapidly as orders are received and the first vessel the FAYETTE BROWN has already been ordered to an elevator for unloading.

Capt. Peter Larson, for many years United States inspector of hulls at Port Huron, Mich., has been appointed to a similar position at Chicago to succeed the late Capt. John F. Hanson. Captain Larson assumed his new duties effective Dec. 1.

Navigation Season Ends

With the withdrawing of all storm warnings on the Lakes Dec. 12, together with announcement by practically all of the large operators that their vessels were being laid up for the winer the 1929 season of navigation on the Lakes was brought to a close. The dumping of an occasional coal cargo continued for several days but this was only storage coal. The annual homeward journey of the masters, chief engineers and crews began the middle of the month and a number of vessels have gone into various shipyards for repairing and reconstruction work to be put in readiness for the opening of the 1930 season. The winter laying up of the larger fleets shows that the greater part of the fleet of the Pittsburgh Steamship Co., which operates the largest bulk freight fleet on the Lakes is in winter quarters at Toledo while Chicago ranks second. Most of the vessels of the interlake Steamship fleet are at South Chicago.

Establish New Records in Ore and Coal

The 1929 season on the Great Lakes again saw the establishing of another new all-time record lake movement of iron ore. The movement for the year totaled 65,195,478 gross tons comparing with the former high mark set up in 1916, when 64,734,198 gross tons of ore were moved. The belief is that this record will stand for some time unless industry in general continues even more active than it has been throughout the past year. Increased production of steel ingots and finished steel has resulted in this record breaking ore movement and it is expected by some authorities that a total of 57,000,000 tons of ingots and approximately 42,100,000 tons of finished steel have been manufactured during 1929. This compares with the 50,300,000 tons of ingots and 37,200,000 tons of finished steel produced in 1928. The figures for the month of November this season fell below those of the same month last. This year's figure for this month was 3,941,524 while that of a year ago was 4,260,943 gross tons.

Another element which contributed greatly to the record ore movement was the increased draft of the vessels. It is quite possible, in view of the bad weather conditions which came earlier this year than usual that lake vessels would not have been able to carry the tonnage which they did during the past season had it not been for this increase in draft.

A new all-time record for movement of bituminous coal was established on the Great Lakes during the past season. The net tonnage of this product dumped into the holds of lake freighters for cargo and for fuel amounted to 39,105,913 net tons. In addition, during the month of November of this year there was a larger movement of bituminous coal than from the two years previous. For November of this year, the total tonnage moved was 4,393,190 net tons while for the years 1928 and 1927, the figures were 4,269,928 and 3,281,031 net tons respectively.

Clubrooms Now Ready

According to Bob White, custodian, the combined clubrooms and winter quarters of the Lake Carriers and Shipmaster's associations were ready early in December. The rooms for the Lake Carriers association were in readiness earlier than those of the other group but both were to be in full swing in short order. The rooms are to be open from 10 a.m. to 10 p.m. daily except Sunday. Quarters are provided with billiard tables, card tables and musical instruments. Comfort in the rooms has been attained through elaborate decorations and furniture. Headed by Capt. Ben McLaren and assisted by Bob White, the social committee of the Shipmasters association is working out a program of winter events which will be climaxed by the annual ball early in February. Visiting licensed officers are cordially invited by the associations to avail themselves of the use of these rooms.

Enlarge River Channel

According to a dispatch from Washington, construction estimates and surveys for an all-American ship channel in the Detroit river from its mouth at Lake Erie to the head of Goose Island and enlargement of the Weitzel lock, St. Mary's Falls, Sault Ste. Marie, Mich., were to be authorized under bills which were to have been introduced by Representative C. J. McLeod of Michigan.

Shipmasters Hold Meeting

The first meeting of the Cleveland lodge of the International Shipmasters association since the close of the season was held at 2 p.m. Dec. 13 in the lodge rooms of the association in the Perry-Payne building. It was the largest first meeting ever recorded by the association. Capt. Robert Thompson is secretary of the association.

Canadians Order Tankers

Orders for seven tankers have been received by the Furness Shipbuilding Co., Haverton Hill-on-Tees, from Canadian operators. One of these orders is for a 16,000-ton twin screw diesel engined tanker which is to be similar to the M. S. CALGAROLITE owned by the Imperial Oil Ltd. The other orders are for four steam driven 2800-ton tankers for the Lakes, one diesel electric vessel of 3600 tons capacity with self unloading gear also for service on the Lakes. The remaining order is for an ocean-going tanker of 3000-ton capacity.

Wm. D. Callaghan, Inc. of New York and Cleveland has announced that W. L. Fitzgerald became associated with this organization as manager of the marine insurance department with headquarters in the Cleveland office. Mr. Fitzgerald actively assumed his new duties on Dec. 15.

Two Package Freight Companies Merge

Acquisition by the Goodrich Transit Co., Chicago, of the West Ports Steamship Co., Milwaukee, was to become effective Jan. 1, according to announcement of Capt. Edward E. Taylor, president of the Goodrich company. The acquisition was through the organization of a new company, the Goodrich-West Ports Steamship Co., which will operate the boats of the former West Ports Steamship Co., and will operate for the Goodrich Transit Co. on the west shore of Lake Michigan.

The new company virtually becomes a freight-operating line, although the Goodrich Transit Co. will continue its east shore business as in the past. Under the new arrangement, only one of the Goodrich Transit Co. boats will be operated strictly by the Goodrich-West Ports company.

The West Ports Steamship Co. operated three packet freighters between Chicago, Milwaukee and other Wisconsin shore points on Lake Michigan. Goodrich Transit Co., which was founded nearly 75 years ago, operates nine freight and passenger steamers.

A Disastrous Season

Of the 90 or more Great Lakes freight vessels caught in Lake Superior by the early winter storm of Nov. 30-Dec. 1, virtually all passed through the Soo locks and made the lower Lakes without serious difficulty. Ice breaking tugs convoyed vessels down the St. Mary's river.

Twenty members of the crew of the SARNIADOC, Paterson Steamship Ltd., Winnipeg, Man., a grain carrier loaded with 2100 bushels of grain, which ran aground on the reefs of Main Duck island in Lake Ontario on Dec. 1, were rescued Dec. 3 by the VALLEY CAMP.

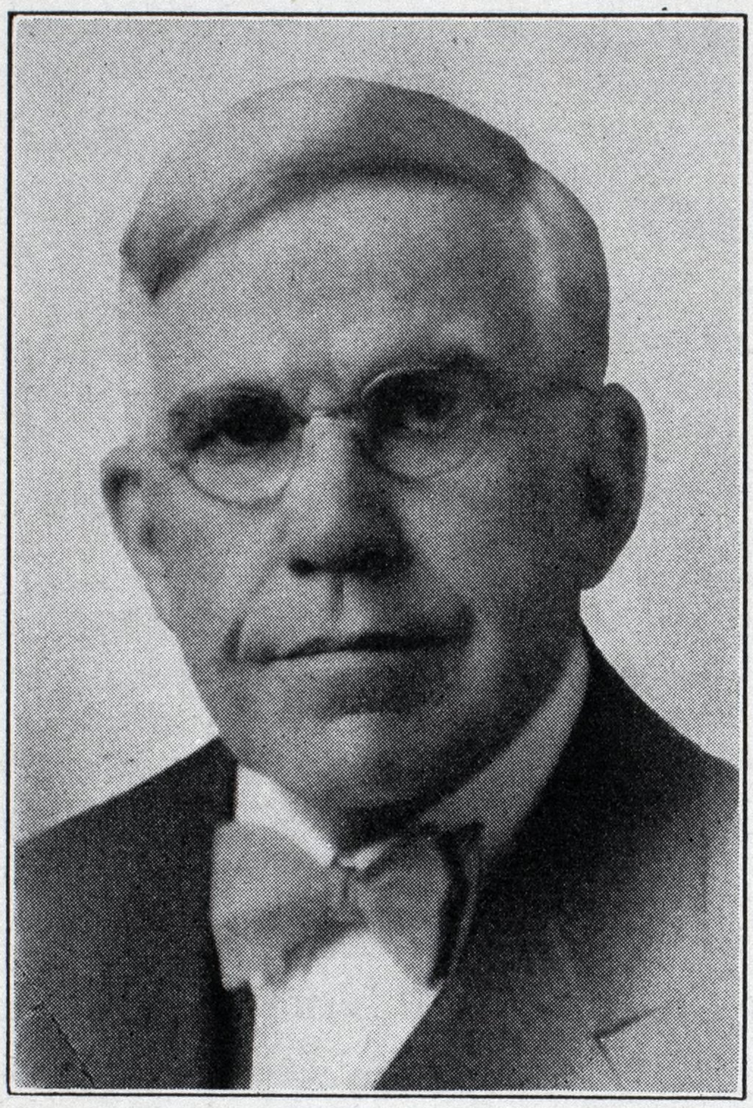
The steamer KIOWA, of the O. W. Blodgett line, bound for Chicago from Detroit with a load of flaxseed, went aground Nov. 30 three miles west of Grand Marias, Mich., in Lake Superior. Six men were lost, including Capt. Alex T. Young, son-in-law of Mr. Blodgett.

The last navigation season is described as the most disastrous one for Lake Michigan, a toll of 119 lives having been taken. Property damage, including losses to shore property from high waters, was estimated at the close of navigation on Dec. 1 at more than $10,000,000. In four major accidents to shipping alone, according to underwriters' figures, 102 persons lost their lives and ships valued at $1,700,000 went down.

Personal Sketches of Marine Men

George A. Tomlinson, President, Cleveland & Buffalo Transit Co.

By E. C. Powers



HE BRINGS to his office as president of the Cleveland and Buffalo Transit Co. a wide range of experience in shipping and finance.

HIS early experience included riding the ranges in Wyoming as a cowboy, and the managing editorship of a metropolitan newspaper.

FOR the last twenty-seven years he has been active in lake shipping, becoming during that time the largest individual operator.

ELECTION of George Ashley Tomlinson to the presidency of the Cleveland & Buffalo Transit Co., Cleveland on Nov. 29, means another honor bestowed upon a man who is one of the most powerful figures in Great Lakes shipping circles and who is the largest individual vessel operator on the inland seas.

This man who at the age of 17 was compelled to leave school, who was for two years a cowboy on a ranch in Wyoming, who was a reporter, and at the age of 27 managing editor of a large Detroit newspaper, is now one of the best known shipping men on the Great Lakes. He is active not only in the business of transportation, but also in enterprises having to do with ship repairs, shipbuilding, banking and philanthropy. His success and influence have been attained through long years of hard work.

Born at Lapeer, Mich., Jan. 26, 1869, young Tomlinson attended the grammar and high schools of that community. At the age of 17 his scholastic career ended and he went to Wyoming where his days as a cowboy began. Two years' rugged life on the range gave him a fine physique and built up a reserve of health which has stood him in good stead. The ranch years also helped to mold his character and to begin the development of that steadfast purpose which in later years has never permitted him to leave his office until the last job was done.

On his return from Wyoming, Tomlinson went to work on the *Detroit Journal*. His first newspaper connection paid him $6 a week. He continued in this job until the roving instinct led him into another totally different line of work. The coming of Buffalo Bill's Wild West show to Detroit ended his journalistic pursuit for the time being and he joined the show as a fancy horseback rider. Remaining with the outfit in this country for a time he finally after going abroad with the troupe separated from it in London and returned to America. Taking an editorial position with the *New York Sun*, he continued in that work for some time until he joined the staff of the *New York Times*. Finally leaving New York, he returned to Detroit where he went to work on the *Detroit Tribune*, becoming managing editor at the age of 27.

Marriage to Laura I. Davidson of Bay City, Mich., in 1902 was undoubtedly responsible for his start in the lake transportation business. After some urging on the part of his father-in-law, the late Capt. James E. Davidson, his career in Great Lakes shipping began at Duluth, Minn. He started in, as he himself said, "knowing little and caring less" about the shipping business. Living expenses of the Tomlinson family for that year amounted to $1800, leaving a balance of $700 from the $2500 which he had to begin with. With this balance and an additional $750 representing the profit on the season's operations, coupled with a desire and willingness to work hard to thoroughly learn the business, he gradually built up a fleet which at the time of the World war numbered 26 vessels, the largest fleet operating on the Lakes at that time under individual management.

At the beginning of the war, Mr. Tomlinson was placed on a committee of two, later increased to four to make a report on the inland waterways of the country. Later,

he was appointed director of inland waterways under the United States Railroad administration. This position he held until Mar. 1, 1920, when the railroads were returned to private ownership.

In assuming the presidency of the Cleveland & Buffalo Transit Co., Mr. Tomlinson succeeds the late T. F. Newman, as president of the company. A director for eight years of the company which he now heads, Mr. Tomlinson is the officer or director of seven shipping companies on the Lakes, several of which operate under his name. He is president of the Buffalo Drydock Co. and is also chief executive of the Superior Ship Building Co. He is a member of the executive committee and a director of the American Ship Building Co. He is vice president of the Great Lakes Towing Co. and a director of the Great Lakes Transit Corp. In addition he is a director of the Goodyear Tire & Rubber Co. and the Goodyear Zeppelin Corp. He is one of five directors of the Midland Bank of Cleveland and a director of the Marine Corp., which is affiliated with the Marine Trust Co., a financial interest located in Buffalo.

Mr. Tomlinson is a trustee of the Playhouse of Cleveland, a trustee of the Institute of Music and of the Public Library. He is also a trustee of Babies' and Childrens' hospital. He is president of Wade Park Manor of Cleveland and is on the American committee of Lloyd's, profits of which go to charity.

Mr. Tomlinson's formula for success is, keep the heart young, maintain good health and work hard day in and day out throughout the years. Books absorb his interest in his spare moments—books of an historical or autobiographical nature.

Officers Study Engineering Methods

THE accompanying illustration shows engineers of the post graduate class of the United States Naval academy and the United States coast guard who recently spent five weeks at the Westinghouse Electric & Mfg. Co.'s East Pittsburgh plant for the purpose of studying engineering and factory methods.

These officers are, standing left to right, Lieut. T. J. Bay, U. S. N.; Lieut. V. J. Charte, U. S. C. G.; Lieut. R. W. Bedilion, U. S. N.; Lieut. C. W. Lawson, U. S. C. G.; Lieut. M. E. Mills, U. S. N. Seated, Left to right, Lieut. W. D. Hoover, U. S. N.; Lieut. G. R. Cooper, U. S. N.; Lieut. H. G. Rickhover, U. S. N.; Lieut. G. A. Tyler, U. S. C. G.; Lieut. S. A. Olsen, U. S. C. G.; Lieut. F. T. Kenner, U. S. C. G., and Lieut. J. A. Herschfield, U. S. C. G.

This course is the outgrowth of some years of co-operation between the post graduate school of the United States Naval Academy and the Westinghouse company. During nine years the number of officers who have been assigned to this duty totals 115. This year's group was assigned to duty through B. M. Chiswell, assistant commandant, United States coast guard, treasury department, Washington.

The program consisted of actual assignments to testing departments of the works. In that way direct experience was obtained not only in testing but in actual setting-up and adjusting of electrical machinery. In conjunction with these test assignments lectures were given the officers on all the important phases of electrical engineering as applied to marine usage. Inspection trips to the major plants in the Pittsburgh district were also made.

Reconditioning of Ships

In anticipation of substantial increases in the movements of grain, cotton and flour from Gulf ports to Europe during the next several months, the shipping board has authorized the reconditioning of six steel cargo steamers now in layup. The ships will be ready for service within 60 days. The outlay authorized amounts to $414,000. The vessels and their deadweight tonnages are as follows: MARNE, 9720; WEST COMPO, 8613; WEST HASSAYAMPA, 8572; WEST MUNHAM, 8639; CITY OF ALMA, 8727; ARDEN, 8727.

Ships of Planet Line Sold

The steamers CENTAURUS, CLAUSEUS, CORVUS, CIRCINUS, and EURANIA, comprising the fleet of the Planet line, were acquired on Dec. 12 by the Calmar line, subsidiary of the Bethlehem Steel Corp., for operation in the intercoastal trade.

These vessels are approximately 5,000 gross tons each, with a speed of 10 knots. As soon as they complete their present voyages they will be turned over to the Calmar line, giving the company a total of 12 ships in the intercoastal trade.

The motor liner SOUTHERN PRINCE which recently entered service as one of the four new vessels built by the Prince line for its trade between New York and South American ports, recently arrived in New York a day ahead of schedule, having made the run at an average speed of 17 knots.

Reviews of Late Books

Commodore David Porter; 1780-1843, by Archibald Douglas Turnbull, paper 316 pages 8 by 5 inches, published by The Century Co., New York, and furnished by MARINE REVIEW, Cleveland, for $3.50 plus 15 cents postage, or in Europe by The Penton Publishing Co. Ltd., Caxton House, Westminster, S.W.1, London, for 18s 6d.

We can recommend this book to anyone who loves the sea and adventure. The actual experiences of this hard headed and tough fibred old American sailor goes far beyond the imaginings of romance. Roosevelt, in his history of the war of 1812, gives Commodore Porter one of the highest places among the famous names of the navy. Every page of this book is interesting. The author has the ability to make the characters and events of over a century ago real and alive to the reader of today. His knowledge of ships and maneuvers from a technical viewpoint, since he is himself a retired officer of the navy, gives an authoritative tone to his descriptions of stormy voyages and hotly contested engagements.

David Porter was the kind of a fighter who would have made an excellent pirate had not the United States navy recognized his qualities and made him instead the enemy of pirates in the Mediterranean and later a commander of his own ship against the British in the war of 1812. He loved to operate by himself. His voyage in his ship the ESSEX around Cape Horn is a tale of high adventure itself. Once in the Pacific he made himself the terror of British shipping. His feats are a reminder of those of the German Count Luckner in the World war. With his single ship, Commodore Porter captured prize after prize and performed unbelievable acts of seamanship time and again saving his ship or consorts by his skill and daring. He was a man to hold up as an example of courageous, intelligent and virile manhood and he may be rightfully pointed to with pride as one of those who made the continuation of the Republic possible.

The Shipping World by John A. Todd M. A. B. L., cloth; 292 pages, 4⅞ x 7½ inches. published by Isaac Pitman & Sons. New York City and furnished by MARINE REVIEW, Cleveland for $2.25 plus 15 cents for postage and in Europe by the Penton Publishing Co. Ltd., Caxton House, London for 10s 6d.

The book is a survey of the business of shipping in both its land and water phases and is based on actual facts as taken from lectures delivered at the City School of Commerce at Liverpool. In the opening chapter of the work there is given a brief history of ships and their uses in the past. The transition from sail to steam, and from wood to iron and steel is covered and the general subjects of passenger and emigrant steamers, cargo ships, refrigeration, construction and launching are taken up.

The second chapter discusses the subject of engines and under this heading treats in the reciprocating steam engine, simple, compound and triple expansion; turbines, direct and geared; internal combustion engines; electric drive, comparative performance, etc.

In subsequent chapters, the deck department of the ship is touched on, engine room staff duties outlined, the victualling and purser's departments discussed. Other phases of the shipping business treated are: Trade routes, the shipbroker, passengers and emigrants, shipping office organization, navigation, weather and tides, ports and harbors, etc.

The object of the work is to give those in every phase of the shipping trade a comprehensive idea of the work of the departments which they know nothing about.

Merchant-at-Arms by David W. Bone, cloth 311 pages 5½ x 8½ inches, published by E. P. Dutton & Co., Inc., New York City and furnished by MARINE REVIEW, Cleveland, for $5 plus 15 cents for postage and in Europe by the Penton Publishing Co. Ltd., Caxton House, London for 25s.

The only book which tells how Great Britain was maintained during the war, this volume is the result of first hand observations of the master of one of the merchant vessels in active service throughout the war. The book completely and interestingly covers the subject of the British merchant service and makes plain how very vital was the part which the service played in getting supplies through to the front and to the nation. According to the author's own statement, "this book is an effort to record a seaman's impressions of the trial through which the merchant service has come in the war". Written in a very straight forward style, it is a plain statement but a very interesting and instructive one, of the facts relating to a department of the war, the service of which the allies knew little about and appreciated less. Always in the background of the nation's thought about the war the merchant service was always very impressively the vanguard of the defense and maintenance of the allies in the war zone. Called upon not only to perform the hazardous duty of running supplies unarmed through seas infested with enemy mines, torpedoes and submarines, it was also eventually forced many times after arms were mounted on the decks of its vessels into actual conflict with the enemy. The part played by this service cannot be over emphasized. Every person should read this book if he is to know about the activities of one of the most important factors in winning the war.

In the beginning, the author gives a general introduction to the subject, covering the foundation of the merchant's service and describing its basic structure. The relations of the service with the navy are described, showing how a wide gap between the two was finally closed by the actuality of the war. General topics covered include manning of vessels, coastal services, signals and wireless, salvage, camouflage, the convoy system, in short all the various phases of the merchant service.

Forty Years With General Electric, by John T. Broderick, cloth; 218 pages, 5 x 7½ inches, published by Fort Orange Press New York City and furnished by MARINE REVIEW, Cleveland, for $2.50, plus 15 cents for postage and in Europe by the Penton Publishing Co., Ltd., Caxton House, London for 12s 6d.

The book is a history of 40 years of the General Electric Co.'s industrial activity and was written by a man who has been in close association with the company throughout the period about which he has written. A great deal of human interest is to be found in this well written biography which tells not only of the growth and development of the General Electric Co. but also includes intimate and vivid sketches of such prominent leaders of the electrical industry as Thomson, Coffin, Steinmetz and others Several chapters dealing with Steinmetz present material heretofore unpublished concerning the life and work of the late scientist. Some of the great achievements of research are described clearly and directly.

Some of the interesting chapters are The birthplace of General Electric, Samuel Insull, Whitney-Man and Scientist, Research Laboratory Founded Bacon's New Atlantis, Conquest of Tungsten, and What Steinmetz Did.

Shipbuilding in U. S.

(*Continued from Page* 21)

general on applications for mail contracts and on similar action by the shipping board on applications for loans from the construction loan fund will require during the next two or three years the services of a total of 31,000 employes per year or 10,000 more per year than are now employed.

The shipyards now in actual operation in the United States can absorb 10,000 additional workmen with their present facilities and still operate at less than normal capacity, and without interfering with their ability to undertake the construction of new naval vessels. The fact is that until the enactment of the merchant marine act of 1928, and the participation by shipowners in the construction loan fund and in the compensation for carrying mails provided by the act, the private shipyards in the United States had been operating for many years far below their capacity and had been employing a much smaller number of workmen than their facilities required when operating under normal conditions.

Apart from their facilities at present in use to complete the construction of merchant and naval vessels now in progress, the shipyards in the United States still have not less than 30 unassigned building ways and all of the shop and mechanical equipment necessary to operate with them.

The capacity of the shipyards to undertake and perform with expedition and reasonable program for the construction of additional merchant and naval vessels is not curtailed by the absence of yard, shop or mechanical facilities; but is determined solely by their ability to assemble and train a suitable staff of technical and mechanical employes.

It is well to keep in mind that only 40 per cent of the cost of a vessel is represented by labor performed in a shipyard and an equal percentage of cost is expended for labor performed outside of the yard in the production of its materials, equipment and accessories. If, therefore, 31,000 workmen were employed in the shipyards, a corresponding number of workmen would be employed outside of the yard in industries distributed throughout the United States.

The program outlined above will, therefore, require a grand total of not less than 62,000 employes per year.

The construction of vessels on the shores of the Great Lakes and internal waterways constitutes a substantial part of the volume of shipbuilding of the country. The shipyards in these districts are equipped with facilities which enable them to construct vessels of large and small tonnage required for service on the Great Lakes and rivers. Their importance and the demand upon them for shipbuilding will increase as progress is made in the development of the Great Lakes to the Gulf waterway and of other projected inland water transportation systems.

The ship repair industry is closely affiliated with shipbuilding. Its volume of business cannot be determined with the same accuracy as that of the shipbuilding industry due to the fact that its work is confined to the upkeep of vessels required by ordinary wear and tear; to reconstruction work and to repairs due to casualties. As a consequence no definite statement can be submitted as to the probable volume of the business, performed by the repair yards, but that it closely approximates in volume the value of ship construction outlined above is disclosed by the report of the census of manufacturers for 1927, and it requires therefore the employment of substantially the same number of workmen as the shipbuilding industry.

In the above analysis of shipbuilding in the United States no consideration has been given to the replacement of domestic cargo vessels that are rapidly becoming obsolete. With few exceptions all of the cargo vessels now operating under the American flag in both the foreign and coastwise trades are ten years or more of age. By reason of depreciation, casualty and obsolescence the average effective life of a vessel is 20 years, so that the existing cargo fleet must be replaced or extensively rebuilt within the next ten years to enable it to operate effectively. Such replacement will involve an expenditure of not less than $500,000,000 spread over a period of ten years. The replacement of this fleet of cargo vessels has been delayed because of the existence of the idle and unsold shipping board vessels built during the war

Overhauling S. S. America at Morse Plant

RECONDITIONING of the AMERICA, big cabin liner of the United States lines, is being carried out at the Morse plant of the United Dry Docks, Inc., New York. The AMERICA ranks next in size to the LEVIATHAN and GEORGE WASHINGTON, of the United States lines, being 668.8 feet long and 21,329 gross tons.

One of the big jobs of the year, the work is to be completed in time for the AMERICA to resume her European sailings on Jan. 15. The principal item in the reconditioning of the AMERICA was the installation of 48 new furnaces, wrapper sheets, numerous stay bolts and 100 stay tubes. Running hot water systems and the accompanying fixtures also were installed in approximately two hundred staterooms.

In addition the contract called for a thorough overhaul of every part of the ship to maintain it in first class condition.

and many of which have been purchased at low prices although they may not be at all suitable for the requirements of the trade in which they are used.

The merchant marine act of 1928 aids owners of cargo vessels by loans from the construction loan fund and compensation for the carriage of mails only in a limited number of trade routes.

Further government aid is necessary to encourage the building of such vessels for services that cannot benefit from mail contracts. This may be accomplished by:

(a) Lending a larger percentage of first cost from the construction loan fund.

(b) Waiving interest during the period of construction.

(c) Deferring payment of interest for a period after completion of a cargo vessel.

(d) Or by such other methods as experience may demonstrate to be necessary.

The replacement of the existing fleet of cargo vessels is one of the problems confronting the ship owner and the shipbuilder for solution in the near future.

Honored for Heroism

The officers and men of the lifeboat crew of the steamer REPUBLIC of the United States lines who rescued the captain and crew of the GANDER DEAL on Dec. 5 in mid-Atlantic were presented with letters of appreciation and checks by officials of the company. President Joseph E. Sheedy of the United States Lines Operations, Inc., in a brief talk to the men praised their skill, courage and seamanship and told them that they had upheld the traditions of the American merchant marine.

Selby, Battersby & Co., floor crafters, announce the removal on Dec. 12 of both business offices and plant from 810-12 Noble street to larger and more modern quarters. The factory is now located at Forty-ninth and Botanic avenue, where sidings from three trunk railroads have been acquired and improved facilities provided. The new business offices are located at Thirty-third and Arch streets, Wilford building, Philadelphia, in the central building section.

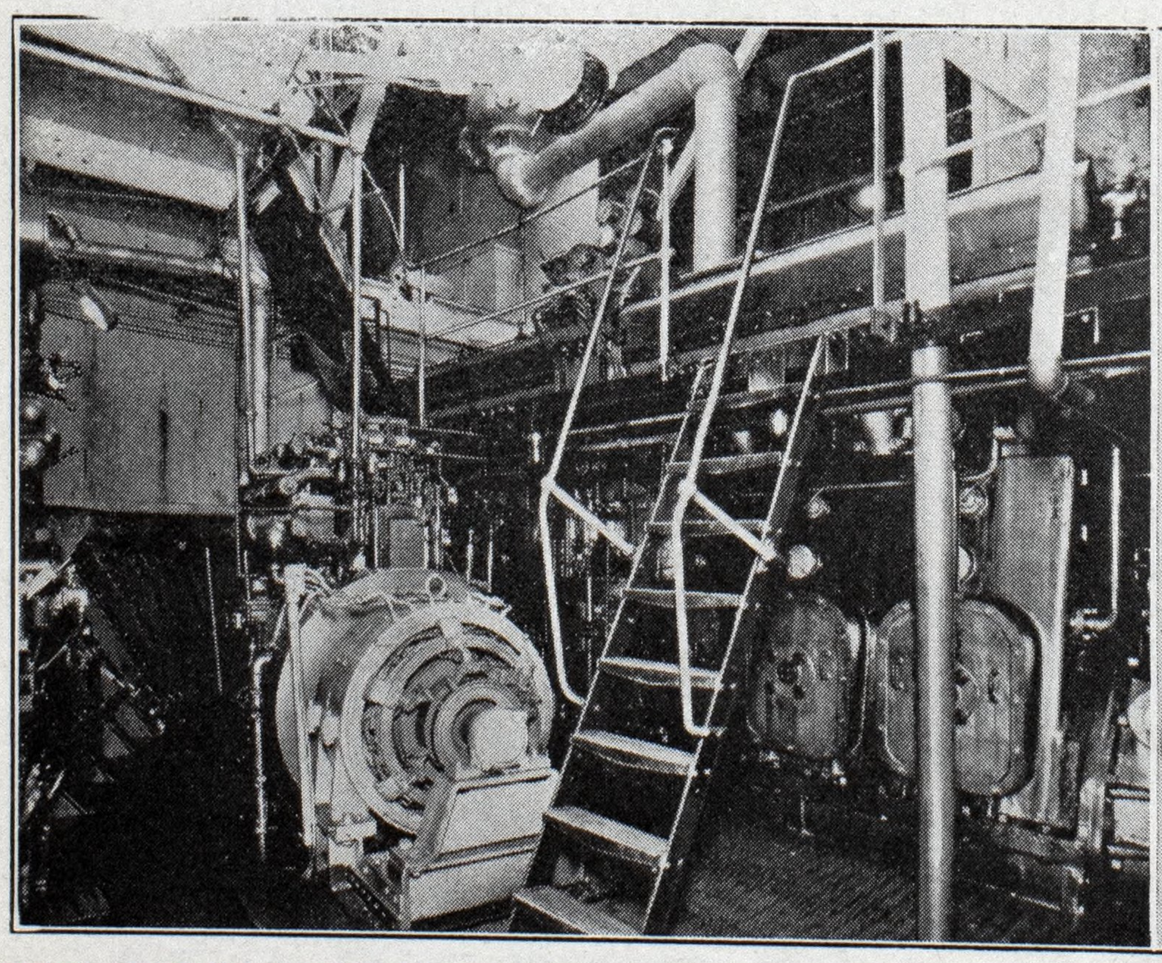
Diesel Lake Freighter Performs Well

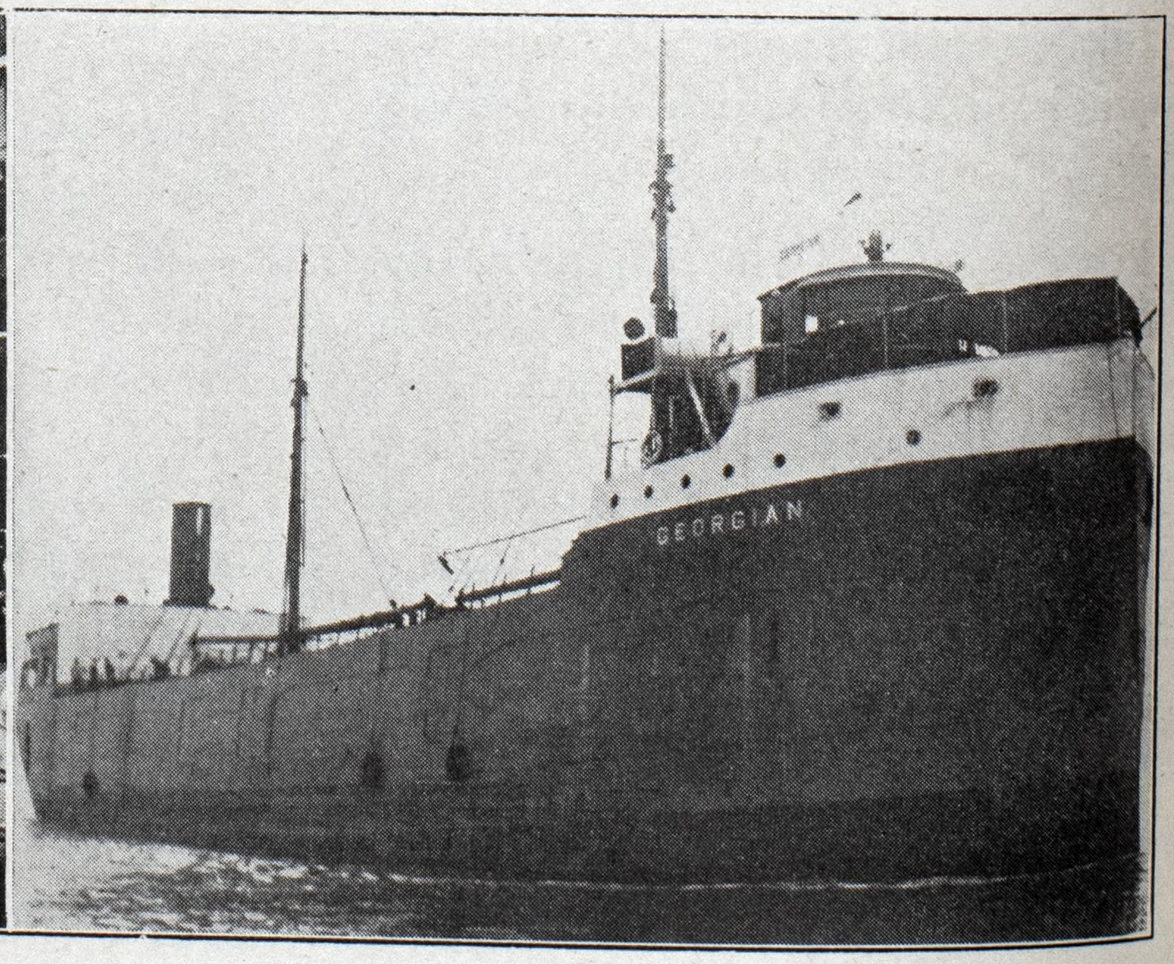
SINCE the launching of the GEORGIAN at Glasgow, Scotland, in 1912, under the name FORDONIAN, this vessel has had a checkered career. During her earlier years she plied in ocean service, performing fairly well but with less flexibility than her owner desired. Hoping to improve her performance in ocean service, she was re-powered, but with apparently little success. After almost 14 years of ocean service, the FORDONIAN was taken over by the Paterson Steamship lines who named her the YUKONDOC and placed her in service on the Great Lakes in the bulk grain carrying trade. Here she quickly won the nickname "Black Sheep," as she never seemed able to complete a full season's schedule and invariably showed a loss at the end of each year's operation, no matter what was done.

After two years of unsatisfactory and unprofitable service in the bulk grain carrying trade on the Great Lakes, the YUKONDOC again changed hands, this time to A. A. Hudson, who renamed her the GEORGIAN, and again re-powered her, this time with a 6-cylinder direct reversible diesel engine rating 765 horsepower at 200 revolutions per minute. Her first season with new power showed a decided improvement and after a few changes had been made in the power plant installation her performance has been satisfactory, even beyond her owner's expectations. Since starting out in the spring of this year in the package freight service, the GEORGIAN, under diesel power, has given excellent performance. She has run a full season's schedule without missing a trip for the first time in her history, and incidentally has shown an operating profit.

Although the GEORGIAN has been operating this season as a package freighter, she is intended primarily for the bulk grain carrying trade, and since her last re-powering, her cargo capacity has been increased by 8000 bushels of wheat. She has a speed of 11½ miles per hour light, 10½ miles per hour loaded and has a minimum canal speed of approximately two miles per hour.

Since the start of the 1929 season, the GEORGIAN has been running between Toronto and Port Arthur, making a round trip every two weeks. According to Captain Hudson, she handles easily in the canals and on the straightaway has made as good if not better speed than others of her class, canal and upper lakes included.





LEFT—ENGINE ROOM OF LAKE FREIGHTER GEORGIAN, FITTED WITH BESSEMER DIESEL ENGINE. RIGHT—THE GEORGIAN, FORMERLY THE FORDONIAN

Electric Steering Gear

(*Continued from Page* 50)

circulating system and are provided with oil retaining rings, so that all the oil drains back into the gear housing reservoir. A positive mechanical drive force feed lubrication system provides lubrication for all other moving parts.

This steering gear has a unique electrical control. Dual controls on the carferries CITY OF SAGINAW 31 and CITY OF FLINT 32 are located in the main pilot house and also in an auxiliary pilot house on the extreme after end of the boat deck. A pointer on the top of the control stand indicates either rudder or helm positions as desired. By turning the steering wheel the pointer is placed in any rudder position and the rudder follows up to that position, traveling at a predetermined speed regardless of the speed at which the steering wheel is turned. The gear itself is built to move the rudder at different speeds as may be needed. Control steps are established at predetermined points on either side of 'midships and vary in amplitude from three-fourths of a degree on the first point to larger steps as the rudder moves to hard-over position. By establishing the exact 'midships point and by having small steps on either side, good steering becomes simple and easy, even to the inexperienced helmsman. The electric follow-up is enclosed in the cast-iron housing and is immersed in oil, thus largely eliminating wear on contact fingers and arcing or burning. Bakelite insulation is used throughout. The control may be readily adapted to gyro-steering.

The electrical equipment is designed to give low current peaks in starting and accelerating the motor. Magnetic clutches are used for changing from one motor to the other and the change may be made from the pilot house instantly for any rudder position without stopping the ship, thus making the standby motor, contactor panel and control effectively available immediately in an emergency. As an additional safety feature there is a practical arrangement for emergency hand steering, should the electrical power fail. The changeover can be made quickly and is positive in action. The hand steering stand may be mounted above deck.

In addition to the advantages noted above, this type of steering gear gives economical operation, as the motor operates only when the rudder is being turned. The simplicity of design and rugged construction reduce upkeep expense to a low point. The operation is so quiet that it can hardly be heard in the steering engine room. The steering engine unit is entirely self-contained and is not dependent upon the rigidity of the hull or deck foundation. Application of power to the rudder stock at two separate points also is an advantage. Operation under all circumstances is safeguarded by the dual motor drive and duplex control with instantaneous changeover from the pilot house.

Issues New Catalogs

A new catalog on motor driven air compressors has been issued by the Westinghouse Traction Brake Co., Pittsburgh, Pa., covering its types 3VS, 3VD, Q-3VS and Q-3VD compressors. The catalog contains complete details of the construction, operation and various parts of these compressors and is well illustrated.

Red Cross Enrollment

REPRESENTATION of every vessel under the American flag is the goal of the high seas roll call of the American Red Cross. This event has been an institution at sea since 1922. The annual roll call of the Red Cross ashore is held between Nov. 11 and Thanksgiving, but owing to the special conditions in the merchant service, the high seas membership enrollment is separate and may be held at whatever time seems best to the individual masters aboard their vessels. The official closing date for the high seas roll call is June 30, 1930.

Each succeeding year has witnessed an increasing interest among shipping men in this activity. Companies and vessels have responded enthusiastically, as seen from the report of the last roll call at sea, when many vessels reported 100 per cent enrollment of personnel and passengers, whole companies enrolling 100 per cent. Among the latter were the Pan American Petroleum and Transport; the Sinclair Navigation Co., and American Merchant lines, while companies reporting solid enrollment of individual ships of their services were the American-Hawaiian Steamship Co., Atlantic Refining Co., Bliss-Dallett Co., A. H. Bull Co., Roosevelt Steamship Co., Colombian Steamship Co., and Consolidated Navigation Co.

Considering that all ships mentioned, as well as many others which enrolled a high percentage of crew and passengers, though not necessarily achieving solid enrollment, were at sea, or in foreign ports during much of the time, the evidence of co-operation in this field is considered remarkable.

In preparation for the annual enrollment, the Red Cross through its insular and foreign branch which has jurisdiction in this matter, has communicated with merchant marine companies, including those responding previously, those which have done so at irregular intervals, and others.

Among veteran skippers familiar with the plan, there is considerable rivalry which is reflected ashore in the pride which their companies take in reporting a solid enrollment. The last enrollment on the high seas reached 20,000 members, including merchant marine and navy.

AN IMPORTANT FUNCTION OF THE AMERICAN NAVY IN PEACE TIMES IS RELIEF WORK. ONE OF THE NAVY SHIPS USED IN THIS CAUSE

Late Flashes on Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
Arnus	Mar. 26	Disabled	Ponta Delgada	Steer. gear
Athelduke	Mar. 28	Struck quay	Greenock	Stem
Apollo	Apr. 4	Ashore	London	Abandoned
Aurelia	Apr. 9	Collision	Crossness	Sank
A. H. Daughrill	Apr. 30	Explosion	Caloosah. River	Sank
Anastassios A. Syrmas	Apr. 17	Collision	Ea. Royal Sovereign	Bows; stem
Aequitas	Apr. 17	Collision	Ea. Royal Sovereign	Not stated
Archangelos	Apr. 18	Aground	Chynalls Point	Bottom
Actif	Apr. 8	Ashore	Nr. Algiers	Floated
Avance I.	Apr. 11	Collision	River Seine	Stem
Barge No. 26	Apr. 12	Struck reef	New York	Sank
Biela	Apr. 16	Collision	Buenos Aires	Above waterline
Belridge	Apr. 17	Aground	Off Kingston	Floated
Bennington Court	Apr. 19	Ashore	Nr. Cape Charles	Floated
Balgowan	Apr. 20	Collided pier	Daiquiri	Steer. gear
Bungenas	Apr. 4	Aground	Farosund	Not stated
Banken	Apr. 19	Stranded	Kristianopel	Not stated
Bahia Del Fondo	Apr. 26	Struck rock	Nr. Tova Island	Total wreck
Begonia	Apr. 29	Struck dolphins	Antwerp	Propeller
Black May	Apr. 15	Gale-ashore	Skidegate Inlet	Damaged
Baldur	Apr. 6	Stranded	Thissinghus	Floated
Baltabor	Apr. 12	Ice	Tallinn	Damaged
Cambrian	Mar. 29	Aground	River Plate	Not stated
Colinton	Apr. 1	Aground	Moselgrunden	Floated—forepeak
Cabo Villano	Apr. 17	Aground	Delaware Bay	Floated
Chirikof	Apr. 16	Struck shoal	San Francisco	Bottom
Cardiganshire	Apr. 5	Disabled	Suez	Propeller
City of Simla	Apr. 9	Fire	Hull	No. 2 hold
Cunene	Apr. 10	Collision	Buenos Aires	Damaged
Cuma	Apr. 10	Collision	Buenos Aires	Damaged
Cerboli	Apr. 11	Ashore	Nr. Trinkitat	Not stated
Cylon	Apr. 24	Ashore	Off Victoria Whf.	Not stated
Christobal Colon	May 2	Collision	Off Quarantine	Bow
Caloria	May 3	Ashore	Nr. Nuevitas	Floated
Clanwood	Apr. 18	Fire	Hartlepool	Not stated
Cape Crozier	Apr. 22	Disabled	Seydisfjord	Propeller
Christina Bailey	April	Fire	Nr. Mallaig	Total loss
Concordia	Apr. 4	Aground	Buenos Aires	Floated
Cormorant	Apr. 4	Disabled	Kirkwall	Crankshaft
Couteaudoc	Apr. 9	Collision	Swansea	Bow
Capitaine Le Masne	Apr. 11	Aground	Tees	Floated
Doricstar	Apr. 12	Struck sub. object.	Straits of Juan de Fuca	Bottom
Delight	Apr. 13	Ashore	Eagle Harbor	Not stated
Don Thompson	Apr. 4	Disabled	Concepcion	Propeller
Daisy	Apr. 11	Sank	London	Prop. shaft
Dynamic	Apr. 22	Collision	Garston	Considerable
Elima	Mar. 28	Collision	Bay of Biscay	Stem; bows
Evanger	Apr. 16	Ashore	Newport Beach	Floated
E. J. Laway	May 1	Sank	Drummond Island	
Errington Court	Apr. 24	Collision	Nr. Seattle	Bow; stem
Elsie Mary	Apr. 18	Sprank leak	Off Alderman Isl.	Abandoned
Emma Wendig	Apr. 25	Sprang leak	N. W. of Arkona	Sank
Essex	May 1	Capsized	London	Sank
Emlynian	Apr. 11	Ashore	Bordeaux	Floated
Florencia	Apr. 24	Abandoned	St. Johns, N. F.	
Falkenstein	Apr. 17	Collision	Off Beachy Head	
Flora	Apr. 1	Aground	Concepcion Bay	Floated
Fella	Apr. 9	Struck pier	Vancouver Harb.	Plates
Frisco	Apr. 10	Disabled	W. of Canary Isl.	Boilers
Gangtai	Mar. 27	Collision	Nr. Woosung	Sank
Gloxinia	Apr. 3	Aground	Monte Video	Floated—bottom
Gorizia	Apr. 3	Ice	Odessa	Propeller
Granby	Apr. 27	Aground	Lake St. Francis	Floated
Gaboon	Apr. 15	Aground	Antwerp	Floated—forepeak
Gwentland	Apr. 17	Collision	Southampton	Starboard side
Glenmar	Apr. 17	Collision	Southampton	Not stated
Golden Eagle	May 10	Fire	Newcastle	Not stated
Goyo Maru	May 2	Stranded	Kamohatka	Leaking
Gardelaki	Apr. 17	Ashore	Rhone	Floated
Hassler	Apr. 17	Sank	New York	
Hermione	Apr. 11	Collision	54:56 N, 0:20 E	Not stated
Hilmir	Apr. 11	Collision	Reykjavik	Damaged
Hillsborough	May 8	Ashore	Off Port Richmond	Floated—bottom
Hadiotis	Apr. 22	Fire	Off Borkum Roads	Not stated
Hero	Apr. 3	Aground	Blackwail Point	Floated
Inger	Apr. 9	Aground	Irvine Bar	Floated
Jessica	Apr. 1	Collision	Greenwich	Plates; rails
John Perring	Apr. 9	Collision	Crossness	Starboard side
John O. McKellar	Apr. 22	Ice	St. John's	Propeller
James E. Coburn	Apr. 25	Sank	No. Bermuda	
Kosmos	Mar. 26	Aground	Fleetwood	Damaged
Kuma Maru	Apr. 14	Collision	Quarantine	Damaged
Koefir	Apr. 19	Collision	Nr. Hook of Hol.	Not stated
Kidderpore	Apr. 23	Collision	Kobe	Damaged
Libia	Mar. 27	Collision	Nr. Woosung	Not stated
London Importer	Apr. 30	Collision	Glasgow	Above waterline
Lalande	May 3	Collision	London	Damaged
Loch Ryan	Apr. 15	Aground	Tralee Canal	Floated
Mavis	Apr. 1	Collision	Greenwich	Damaged
Meteor	Apr. 1	Aground	Bonanza	Floated
Moyalla	Mar. 30	Aground	Inniscrone Bay	Floated
Montana	Apr. 16	Sank	Kill Von Kull	
Mateba	Apr. 9	Struck quay wall	Antwerp	Port side
Mauna Ala	Apr. 24	Collision	Nr. Seattle	Hull
Maltran	Apr. 25	Aground	Nr. Seattle	Floated
Manchester Citizen	Apr. 27	Ice	Quebec	Forepeak
Merganser	Apr. 30	Collision	Glasgow	Stem
Nikkai Maru	Apr. 2	Ashore	Saghalien	Not stated
Nikola Mihanov	Apr. 15	Fire	Mejillones	Not stated
Nikkai Maru	Apr. 2	Ashore	Saghalien	Not stated
Nordico	Apr. 3	Aground	Alberoni	Floated
Older	Apr. 10	Struck dock	Methil	Bow; port side
Orania	Apr. 13	Stranded	Grytholmen	Floated
P. N. Damm	Mar. 28	Collision	Bay of Biscay	Sank
Palma	Apr. 4	Disabled	Amsterdam	Machinery
Pegasus	Apr. 11	Collision	54:56N., O:20E	Damaged
Penarth	Apr. 12	Sank	Off Lydney	
Peer Gynt	May 3	Collision	Nr. Cape Henry	Considerable
Paris	Apr. 18	Aground	Eddystone	Floated
Prompt	Apr. 18	Sank	Funchal	
Pythis	Apr. 19	Capsized	Oslo	Not stated
Pacifico	Apr. 15	Disabled	Corunna	Boilers
Percy	Apr. 16	Disabled	Malmo	Leaking
Quercus	Apr. 28	Aground	Santa Fe	Floated
Ringhorn	Mar. 27	Collision	Off Tilbury	Stem; port bow
Rubens	Apr. 3	Ashore	Fragoso Cay	Not stated
Remo	Apr. 24	Fire	Trieste	Considerable
River Orontes	May 2	Collision	Off Quarantine	Holed aft
Selje	Mar. 29	Sank	W. of Port Phillip	
Stanley	Mar. 27	Collision	Nr. Goole	Holed—beached
Swift	Mar. 28	Collision	London	Port bow
San Jacinto	Apr. 14	Collision	Quarantine	Starbd. side
Sylvana	Apr. 12	Fire	So. Grand Banks	Sank
St. Jerome	Apr. 4	Struck quay wall	Havre	Port side
St. Patrick	Apr. 8	Fire	Fishguard	Above water line
S. H. Robbins	Apr. 26	Aground	Lake Huron	Tanks—bot.
Southern Cross	Apr. 23	Fire	At sea	No. 2 hatch
Senita	Apr. 30	On rocks	Nr. Progreso	Total wreck
Sally Maersk	May 2	Aground	Off Shooters Isl.	Floated
Steel Engineer	May 3	Collision	Philadelphia	Not stated
Stewart T. Salter	May 6	Ashore	Cape D'Or	Floated
St. Andre	May 8	Disabled	No. of Punta Carrizo	Propeller
Suwanee	May 6	Stranded	Nr. Roanoke Isl.	Not stated
Shakespear	Apr. 19	Struck buoy	Rotterdam	Rudder; stern
Schleswig	Apr. 22	Ice	Tallinn	Propeller
Sarba	Apr. 10	Aground	Fleetwood	Floated
Skagern	Apr. 11	Collision	River Seine	Forehold
San Andros	Apr. 18	Disabled	Gravesend	Machinery
Trolleholm	Mar. 28	Ashore	No. of Elsinore	Not stated
Transylvania	Mar. 29	Struck rocks	Cherbourg	Considerable
Tung-Ting	Mar. 30	Struck rocks	Hankow	Badly
Turaida	April 2	Ice	Liepaja Libau	Propeller—lost rud.
Talacre	April 3	Struck quay	Dublin	Propeller
Topa Topa	Apr. 19	Ashore	Nr. Leghorn	Floated
Titania	May 3	Collision	Philadelphia	Starboard side
Tczew	Apr. 12	Stranded	Gronsund	Floated—bottom
Tosan Maru	Apr. 23	Collision	Kobe	Damaged
Thalatta	Apr. 24	Fire	Egersund	Amidships
Torrontero	Apr. 24	Explosion	Coruna	No. 1 and 2 holds
Theano	Apr. 26	Collision	Waterford	Rudder
Tres	May 2	Collision	Harwich Harb.	Stem; bow
12 de Octobre	Apr. 29	Collision	Buenos Aires	Damaged
Viollette	Mar. 26	Aground	Fleetwood	Not stated
Venus	April 2	Ashore	Stavanger	Leaking—floated
Volendam	April 8	Collision	Rotterdam	Not stated
Virginian	Apr. 26	Fire	San Francisco	Damaged
Viking	Apr. 29	Fire	Lat. 11N, lon. 123 E	Total loss
Victoria	May 10	Ashore	Yangtze River	Not stated
Vela	May 1	Fire	St. John's	No. 2 hold
Valdimir	Apr. 10	Stranded	Crete	Not stated
West Hika	Apr. 16	Disabled	Nantucket	Rudder
Westpool	Apr. 21	Collision	Elbe	Main line shaft
Wasaborg	Apr. 8	Collision	Rotterdam	Bow
Wareatea	Apr. 12	Sank	Launceston	
Westerdale	Apr. 11	Collision	Antwerp	Slight
Windar	Apr. 11	Stranded	River Tees	Floated
Wilhelm	Apr. 19	Collision	Nr. Hook of Holland	Rudder
Yalou	Apr. 24	Struck quay	Dunkirk	Stem
Zent	Apr. 22	Collision	Garston	Not stated

Canadian Seaports

(*Continued from Page* 24)

Saint John is Canada's principal winter port on the Atlantic and ranks third after Montreal and Vancouver in the total volume of traffic handled throughout the year. Twenty overseas steamship companies operate from it and fifteen coastwise lines, and it has recently seen a substantial new business loom up through the inauguration of direct steamship service from Canada to the British West Indies. It made a new record in grain shipments in 1928 with the export of 26,938,450 bushels of gain, an increase of 7,000,000 bushels over the previous year, and of 3,000,000 bushels over the previous record. It also set up a new record in passenger traffic last season, with one exception showing an increase in handlings every month over the previous year.

Though splendidly equipped as an all year round port equipment became entirely inadequate to the handling of the traffic coming to it and the port commission accordingly launched out upon a program of expansion at an expenditure of $10,000,000 upon which it is still engaged. The general scheme includes the construction of one grain conveyor gallery; a grain jetty; a pier equipped with four one story fireproof sheds and shipping offices; one grain elevator of 2,400,000 bushels capacity; with grain conveyor galleries for loading; and the necessary railway tracks, roadways, sewage, and water supply for the new works.

Halifax in 1928 similarly experienced its record season and in five years the shipping tonnage at the port has gone up by 100 per cent. This port has shared with Saint John in the increase in grain shipments to go out by the Atlantic ports and in 1928 handled 2,703,375 bushels, or 439,709 bushels more than in 1927. That further business in this direction is anticipated is evident in the fact that out of the new appropriation a million bushel addition to the present elevator will be built. The heaviest item of expenditure, however, $3,741,500, is for a new pier, and altogether there is a construction program of a very general nature being undertaken.

It is unlikely that any port the world over has experienced such a spectacular rise to eminence in the post-war period as Vancouver. Before the war Vancouver was merely the Canadian outlet for an insignificant volume of trade across the Pacific. Today this business has grown to enormous proportions and in addition Vancouver is trading with practically every country of the globe. Imports now pass through this port from thirty-five countries for distribution in Canada and the United States, and fifty direct steamship lines serve it. Between 1921 and 1928 Vancouver's exports increased by 260 per cent and its vessel tonnage by 160 per cent. The growth of grain traffic has in particular been meteoric. In 1919 not a single bushel was handled at the port and 1928 handlings just fell short of 100,000,000 bushels.

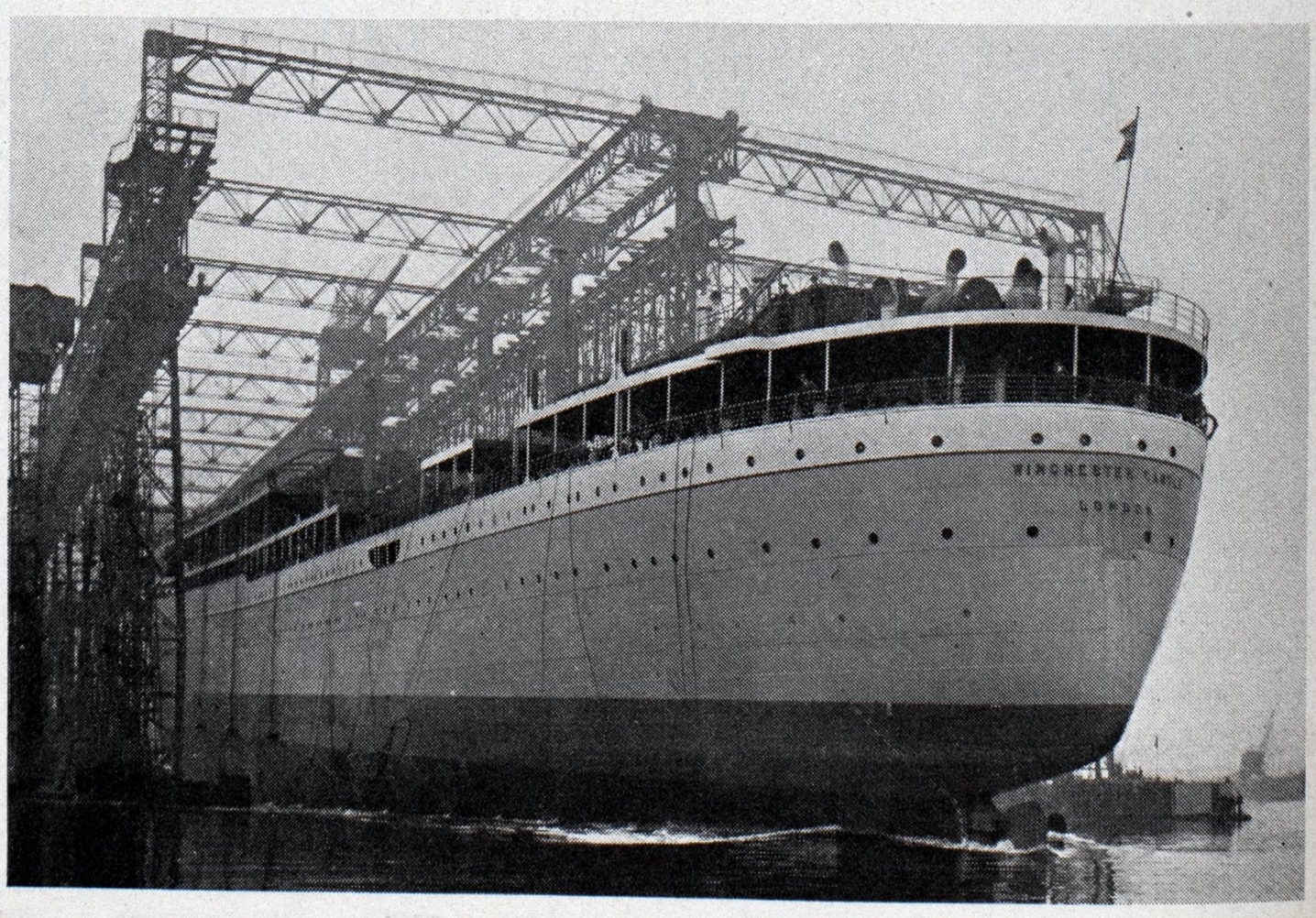
Since the end of the war there has been ceaseless activity at Vancouver in an effort to cope with the increasing trade coming to it, and consequently the status and appearance of the port have been completely altered. The year 1928 was outstanding in this respect. The elevator capacity of the port was raised 3,000,000 bushels, reaching a figure of 12,000,000 at the end of the year. An additional 2,500,000 bushels capacity planned by private interests will bring the total up to a place where the Pacific port will rival Montreal in this regard while, according to report, the Vancouver harbor commission plans to add 7,500,000 bushels capacity to its own three elevators. Vancouver is spending $3,500,000 for the development of a new ocean pier; and $1,500,000 for wharves for vessels in the coastal service, fish wharf, fish storage, cold storage, etc. Trade there is always expanding and prospects there are brighter than ever with many significant developments in sight.

The appropriations voted for Three Rivers and Chicoutimi are eloquent of the increasing prestige of the lesser ports of Canada, not so national in character but achieving a growing business from the increasing development of the territories about them with the greater exploitation of raw resources and growing industrial activity. They are typical of what is taking place on both coasts of Canada at many points.

Three Rivers is little known outside of Canada but to Quebec province it is important in many respects. Situated on the St. Lawrence about midway between Montreal and Quebec it has a splendid harbor capable of accommodating vessels of any size afloat. In itself it has a manufacturing production worth in the neighborhood of $50,000,000 per year, ranking second to Montreal in this respect.

Launch British Motorship Winchester Castle

AN IMPORTANT launch took place Nov. 19, *from Harland & Wolff's North yard, Belfast, when the large motor passenger vessel* WINCHESTER CASTLE *was sent afloat. This vessel is intended for the service of the Union-Castle Mail Steamship line between the United Kingdom and South Africa. Accommodation of a luxurious nature is provided for* 756 *first, second and third class passengers, mostly in single and two-berth staterooms. The approximate dimensions of the vessel are: Length* 630 *feet; beam,* 75 *feet, and depth,* 44½ *feet. There are twin screws and the power consists of two sets of Harland-Burmeister & Wain diesel engines.*



Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
Amberg	May 17	Struck breakwall	Ashtabula	Plates
Ashby	May 16	Collision	Panama Canal	Not stated
Annie Christenson	May 22	Aground	San Francisco	Floated
Arturo Sereno	May 9	Aground	Kakova Point	Not stated
Australia	May 9	Struck pier	London	Aground
Antonios Stathatos	May 13	Collision	Swansea	Port side
Anna C. Minch	May 29	Aground	Buffalo	Floated
Algonquin	May 31	Fire	Galveston	No. 2 hold
Alvarado	May 27	Disabled	New York	Machinery
Artea Mendi	May 17	Struck rocks	Off Ile Sein	Leaking
Audacity	May 27	Disabled	Harwich	Boiler
Ayala Mendi	May 25	Collision	Bonanza	Slight
Amerika	May 30	Aground	Stockholm	Floated
Aube	May 30	Ashore	Nr. Quebec	Not stated
Back Bay	May 17	Aground	Off Pilot Island	Floated
Ballena	May 16	Collision	Panama Canal	Starbd. side
Bratwe	May 6	Disabled	Flekkefjord	Propeller
Baltriger	May 8	Collision	Liepaja	Plates; frames
Braa	May 10	Collision	South Shields	Not stated
Bogota	May 13	Collision	Swansea	Not stated
Brier Rose	May 23	Collision	Fowey	Not stated
Blacktoft	May 30	Aground	Goole Ness	Floated
Brent	May 30	Collision	London	Not stated
British Ensign	May 30	Collision	Ymuiden	Port side
City of Grand Rapids	May 17	Aground	Off Pilot Island	Floated
Crescent	May 15	Fire	New York	Considerable
City of Alton	May 10	Collision	Flushing	Not stated
Cordelia	April 25	Collision	London	Not stated
City of Florence	May 17	Disabled	Colombo	Propeller
Cornwall	May 17	Struck quay wall	Glasgow	Stem
Charles G. Black	June 7	Ashore	Southwest Pass	Not stated
City of Houston	June 5	Fire	Houston	Not stated
Crux	May 22	Collision	Santos	Slightly
Carpena	May 26	Disabled	Ponta Delgada	Machinery
Cedarhurst	May 31	Aground	Galveston	Floated
Canadian Fisher	May 31	Ashore	Puerto Barrios	Not stated
Delight	May 11	Ashore	Four Mile Rock	Floated
Devon	May 7	Fire	Port Chalmers	Not stated
Dorothy Alexander	May 15	Not stated	San Pedro	Propeller
Dunstaffnage	June 7	Collided quay wall	Rio Grande	Rudder
D. R. Morley	June 12	Ashore	Kelley Island	Floated
Eleanor Taylor	May 16	Collision	Off Red Hook	Damaged
Eleni	May 6	Aground	Rouen	Floated
Englestan	May 9	Fire	Aden	No. 2 hold
Entella	May 16	Ashore	Sete	Not stated
Expert	May 27	Aground	Scarboro	Floated
Elin	May 26	Collision	Nr. Cuxhaven	Bows
Evangeline	June 11	Struck pier	New York	Bow
Flying Dutchman	May 7	Aground	West Rocks	Rudder
Fylingdale	May 16	Ice	Yxpila	Bows
France Maru	May 23	Collision	Bolivar Roads	Stem; plates
Florentino Ameghino	May 22	Aground	La Plata	Floated
Falcon	May 23	Collision	River Thames	Not stated
Fane	May 29	Sank	N. W. Morte Stones	
Gloucester	May 14	Fire	Savannah	Not stated
Georgia	May 13	Struck quay wall	Buenos Ayres	Slight
Greyhound	June 3	Collision	Toledo	Wheel
Georg Zelck	May 17	Collision	Swinemunde	Considerable
Goeland	May 22	Ashore	Bordeaux	Floated
H. H. Wolf	May 15	Disabled	Duluth	Wheel
Hedgehope	May 3	Collision	Monte Video	Aground
Hannah Becket	May 14	Sank	Liverpool	Raised
Horsley	May 16	Collision	Rouen	Port side
Hermod	May 16	Collision	Rouen	Port bow
Hong Kong	May 30	Fire	San Francisco	Cargo
Henzada	May 13	Fire	Hamburg	No. 4 hold
Holywood	May 16	Collision	Long Reach	Stem; bows
Henry Lange	June 5	Fire	New York	Considerable
Hagood	June 7	Ashore	Princess Bay	Floated
Innisulva	April 25	Collision	London	Not stated
Idria III	May 15	Collision	Algiers	Stern; stem
Iluntzar Mendi	May 25	Collision	Bonanza	Not stated
Inchdairnie	May 29	Disabled	Bermuda	Boilers
John R. Manta	May 31	Aground	Off Nantucket	Not stated
Jenni	May 29	Stranded	Nr. Ostend	Floated
John Worthington	June 10	Aground	New York	Not stated
Kirsten Miles	June 6	Collision	Shanghai	Above water line
Katriena	May 23	Disabled	London	Machinery
Kawachia Maru	May 22	Collision	Santos	Badly
Lake Treba	May 18	Aground	Galveston	Floated
Lalande	May 3	Collision	Monte Video	Damaged
Lady Lewis	May 17	Collision	Buenos Ayres	Damaged
Minna Horn	May 21	Disabled	Off Red Hook	Engine
Mineola	May 19	Sank	Pawtucket	
Malveoisin	May 3	Ashore	Calais	Not stated
Monarch	May 13	Fire	Tilbury	Not stated
Messathouri	May 24	Aground	Buenos Ayres	Not stated
Michalis Prios	May 28	Ashore	Redcliffe Point	Not stated
Mary Jane Lewis	May 30	Aground	Lydney	Not stated
Most	May 30	Fire	Newport	Not stated
Mueller	May 28	Ashore	Cockburn Island	Slight
Munalbro	June 11	Aground	Bahamas	Not stated
Magicstar	May 30	Fire	Buenos Ayres	No. 3 hold
Midland Prince	May 30	Ashore	Port Stanley	Not stated
Minna Horn	May 21	Disabled	San Juan	Machinery
Noord Hinder	May 10	Collision	Flushing	Not stated
Neithea	May 10	Aground	Kalmar	Floated
Nedjan	May 14	Ashore	Lonstrup	Floated
Nestun	May 16	Ice	Wiborg	Bows
Nubia	May 23	Disabled	Spurn Head	Engine
Orator	May 8	Disabled	London	Machinery
Point Montara	May 12	Fire	Not stated	No. 2 hold
Point Sur	May 18	Ashore	Cuba	Floated
Pastoor Pype	May 3	Disabled	Aberdeen	Engine
Peter Reiss	June 1	Struck pier	Milwaukee	Plates
Parracombe	May 22	Struck quay wall	Pernambuco	Rudder
Portland	May 27	Collision	Hamburg	Not stated
Presidente Gomez	May 27	Collision	Hamburg	Not stated
Quincy	May 23	Collision	Bolivar Roads	Starboard side
Ralph Budd	May 18	Aground	Eagle Harbor	Floated
Red Star No. 17	May 23	Sank	New York	
Rask	May 16	Collision	River Elbe	Badly
Rockwell	May 24	Collision	Southampton	Shell plates
Roydur	May 30	Fire	Monte Video	Forecastle
S. A. Mueller	May 28	Aground	Cochrane Island	Not stated
Sinaola	May 11	Disabled	Off Goat Island	Engine
Sud Cubano	May 16	Collision	Off Red Hook	Damaged
Sud Argentino	May 21	Disabled	Off Red Hook	Engine
Sandwich	May 20	Fire	Portland, Me.	Not stated
Sud Pacifico	May 24	Aground	Buenos Ayres	Floated
Sundsberg	May 1	Sank	Helsingfors	
Slangtan	May 6	Ashore	Kienli	Not stated
Sutherlandshire Lass	May 7	Disabled	Off Burghead	Leaking
Stephen	May 8	Aground	London	Not stated
Shinyo Maru	May 30	Fire	San Francisco	Cargo
Stewart T. Salter	May 23	Not stated	Port Greville	Badly
Skirner	May 16	Collision	Long Reach	Forward
Swainby	June 3	Ashore	Bahamas	Not stated
San Ugon	June 7	Ashore	Bermuda	Floated
Starwell	June 6	Disabled	Oporto	Leaking
Sark	May 22	Ashore	Nr. Novorossisk	Floated
Securitas	May 23	Collision	Hamburg	Rail
Saigon Maru	May 23	Ashore	Hoddaido	Not stated
Sophie Busse	May 27	Struck obj.	River Weser	Sank
Saale	May 26	Collision	Nr. Cuxhaven	Not stated
Sevilla	May 26	Collision	Hamburg	Slight
Silverado	June 5	Aground	Elliott Island	Floated
Seirstad	June 8	Ice	St. Johns, N. F.	Bow
Samuel L. Fuller	June 5	Aground	Off Jennings Island	Floated
Trevanion	May 21	Fire	San Francisco	No. 3 hold
Tenan Maru	May 8	Collision	Shimonoseki	Damaged
Thalatta	May 8	Fire	Oslo	Cargo
Tamon Maru No. 18	May 9	Ashore	Esanmisaki	Bottom
Trave	May 10	Aground	Fitzroy Island	Floated
Toyohara Maru	May 11	Aground	Osaka	Floated
Taikai Maru	May 11	Aground	Osaka	Floated
Ten	May 23	Aground	Middleground	Floated—plates
Taibu Maru	May 22	Ashore	Nr. Shiriyasaki	Not stated
Tracy Brothers	May 27	Disabled	Key West	Engines
Trolla	May 27	Disabled	Swansea	Engine
Uarda	May 15	Collision	Algiers	Not stated
Unbe Mendi	May 30	Aground	London	Floated
Victoria	May 10	Aground	Tungsha Bank	Floated
Vaidava	May 23	Not stated	Bruges	Propeller
Vale of Mowbray	May 25	Collision	Ghent Canal	Port side
Volunteer	June 10	Aground	New York	Floated
Wilbert L. Smith	May 21	Aground	Mutton Island	Not stated
Winkleigh	May 8	Fire	Rio Janeiro	Cargo
Warlight	May 23	Ashore	Rhu Point	Floated
West Modus	June 7	Aground	Galveston	Not stated
Xanthopoulo XIII	May 15	Collision	Algiers	Slight
Yoko Maru	May 31	Fire	Bombay	No. 3 hold
Zinfandel	May 26	Capsized	Point San Pablo	Floated

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
Ardmore	June 11	Aground	Houston	Floated
American Banker	June 15	Collision	Plymouth	Slight
Asgard	June 3	Collision	Rotterdam	Amidships
Ambulant	June 6	Disabled	Delfzyl	Machinery
Acushla f. s.	June 20	Fire	Lat. 44:30, lon 51:10	Abandoned
Amersham	June 27	Collision	Gibraltar	Not stated
Amalfi	June 17	Ashore	Rosario	Floated
Arantzazu Mendi	June 16	Collision	Antwerp	Forward
Anne Hanify	July 1	Ashore	Point Arguello	Floated
Alco	June 19	Grounded	Neath River	Not stated
Atlantica	June 23	Collision	Buenos Aires	Not stated
Amersham	June 26	Collision	Gibraltar	Considerable
Anglo II	June 17	Not stated	Buenos Aires	Propeller
Arminda	July 5	Disabled	Halifax	Engine
Angeliki	June 25	Stranded	Nr. Chalkis	Floated
Ben J. Brewster	June 10	Aground	Galveston	Floated
Blairesk	June 14	Aground	White Island	Leaking-floated
Bob Cat	June 15	Fire	City Island	Considerable
Beda	June 4	Collision	Kalmar	Damaged
Baikal Maru	June 11	Aground	Nr. Mokpo	Afloat
Bolton Castle	June 10	Aground	Off San Carlos	Not stated
Blairesk	June 14	Struck Rocks	Bay of Rocks	Badly
B. L. Pennington	June 17	Sank	Quebec	
Basso Piave	June 19	Collision	38.10N., 9.51W	Not stated
British Governor	June 26	Collision	Royal Sovereign	Bows; fore-peak
Belvedere	June 25	Aground	Dakar	Floated
Bec-Figue	June 24	Stranded	Pernambuco	Floated-machinery
Buyuk Liman	June 24	Ashore	Trebizond	Not stated
Baltonia	July 2	Aground	London	Starboard side
Cedarhurst	June 8	Aground	Galveston	Floated
Chinan	May 31	Fire	Shanghai	Considerable
Chita	May 31	Fire	Shanghai	Considerable
Cabo Branco	June 5	Stranded	Cape Ghir	Not stated
Chindwin	June 7	Collision	Kruisschans Canal	Forward
Conrad Luhring	June 13	Aground	Sandwich River	Floated
Cap D'Albrecht	June 18	Collision	Lisbon	Damaged
Cairngowan	June 20	Struck iceberg	47.53N., 49.11W	Forepeak; No. 1 hold
Crefeld	July 3	Collision	Hamburg	Damaged
Commercial Spirit	July 5	Fire	Rio Janeiro	Not stated
Commodore Barry	July 7	Sank	Providence	
Cantuaria Guinaraes	June 22	Struck buoy	River Scheldt	Not stated
Captain Tires	June 25	Collision	Gibraltar	Not stated
Campeador	June 26	Collision	Gravesend	Not stated
Candida	June 29	Ashore	River Vianna	Not stated
Dunstaffnage	June 6	Collided quay wall	Rio Grande	Rudder
Dionyssios	June 14	Aground	Grundhallagrund	Leaking
Doride	June 18	Collision	Lisbon	Damaged
Daniel Getson	June 24	Collision	Bay of Fundy	Headgear
Deutschland	June 30	Fire	New York	Considerable
Dorothy Luckenbach	July 8	Fire	East Boston	Slightly
District of Columbia	July 3	Collision	Off Point Concepcion	Not stated
Elriad	June 12	Ashore	Tor	Floated
Eugenia	June 13	Ashore	Amsterdam	Not stated
Emsriff	June 18	Collision	Norrakvarken	Damaged
Eight Brothers	June 29	Sank	San Pablo Bay	
F. V. Massey	June 28	Aground	Soo river	Floated
Fairfield	June 27	Ashore	Sagua	Floated
Fairway	June 14	Sank	London	
Felce	June 17	Collision	Maasluis	Bows
Farnworth	June 20	Aground	Leith	Floated
Fofo	June 20	Grounded	Wenningree Marshes	Floated
Feng Yang Maru	June 20	Collision	Shanghai	Slightly
Flottbek	July 8	Collided pier	New York	Starboard side
Gard Maru	June 3	Disabled	Southampton	Engine
Gujarat	June 3	Fire	Calcutta	Considerable
Glencregagh	June 5	Broken in two	Guernsey	Total loss
Gwendoline	June 2	Ashore	Dungeness	Not stated
Georgeanna Weems	June 22	Aground	Miami	Steering gear
Glide	June 11	Ashore	Ochre Pit Cove	Total loss
Gulcemal	June 13	Collision	Stamboul	Rudder
Grand Island	June 7	Hit dock	Duluth	Forward
Goyo Maru	June 24	Aground	Tokio	Bottom
Gastoro	June 28	Collided bridge	New Orleans	Considerable
George W. Mead	July 5	Collision	Lake Superior	Not stated
Geraldine Mary	July 3	Collision	Botwood	Not stated
Greathope	July 1	Collision	Hamburg	Not stated
Hartwood	June 27	Ashore	Point Reyes	Not stated
Heathfield	June 19	Not stated	Montevideo	Propeller; steering gear
Hollywood	June 14	Grounded	Bahia Blanca	Rudder plate
Heraldo	June 27	Disabled	Montevideo	Machinery
Hontestroom	July 2	Aground	London	Stem; port bow plates
Istros	June 19	Collision	Vigo	Damaged
Inkum	July 4	Collision	New York	Rudder
Istar	June 26	Ashore	St. Augustine	Not stated
Ixia	July 2	Aground	Cape Cornwall	Bottom
Jane	June 4	Sank	Ea. of Annalong	
J. M. Schoonmaker	June 28	Struck dock	Soo	Plates
Jolly Hugh	June 26	Collision	Elbe	Badly
J. Fletcher Farrell	June 24	Collision	Houston Channel	Not stated
Kersten Miles	June 6	Collision	Shanghai	above water-line
Kilbane	June 12	Ashore	Langbustier	Floated
K. Y. 27	June 13	Collision	Nr. Tyne	Stem
Katharina Dorothea Fritzen	June 17	Collision	Maasluis	Port side
Kahushika Maru	June 17	Disabled	At sea	Not stated
Kabinga	June 24	Ashore	Djibouti	Not stated
Krosfond	July 4	Collision	New York	Not stated
Laurel	June 16	Not stated	Astoria	Total wreck
Le Norvegien	June 12	Stranded	Astove Island	Not stated
Leda	June 12	Collided quay	Newcastle-on-Tyne	Not stated
Luciline	June 19	Disabled	Halifax	Boiler
Leerdam	July 6	Aground	Off St. George	Tanks leaking
Luise Bergmann	June 26	Collision	Elbe	Leaking
Lady Cecilia	June 23	Struck log	Vancouver	Considerable
Lisbeth	July 3	Aground	Brooklyn	Floated
M. C. Smith	June 20	Aground	St. Clair River	Floated
Munalbro	June 23	Ashore	Nr. Key West	Floated
Marquerite	June 9	Struck pier	Zeebrugge	Stem
Medea	June 12	Not stated	Corunna	Starboard side
Mary Mitchell	June 10	Ashore	Cape Pine Cove	Total loss
Mertainen	June 18	Collision	Norrakvarken	Bows
Motorist	June 19	Collision	38. 10 N., 9.51 W	Not stated
Nordstjernan	June 18	Collision	Copenhagen	Not stated
Northton	July 14	Aground	Soo river	Leaking-floated
Neftesyndicat S. S.	July 1	Disabled	Port Said	Propeller
Olivine	June 11	Aground	Prawle Point	Not stated
Orania	June 23	Collision	Buenos Aires	Not stated
Peter	June 4	Collision	Kalmar	Not stated
Pilton	June 11	Collided with quay	Marseilles	Plates
Pacific Oak	July 1	Collision	Point Concepcion	Port quarter
Porto Rico	July 6	Collision	Ponce	Slight
Picard	June 26	Collision	Tilbury	Port side
Passat	June 25	Collision	English Channel	Damaged
Paul Lecat	June 26	Struck quay wall	Marseilles	Considerable
Palembang	June 21	Aground	Moesi River	Floated
Petroleum II	July 1	Ashore	Matahorda	Not stated
Ringhorn	June 5	Struck rock	Helsingfors	Forehold
Rathlin Head	June 10	Fire	Colombo	No. 1-2 hold
Refrigerant	June 18	Collision	Shanghai	Stern
Resource	July 6	Sank	Moon Sound	
Robert Luckenbach	June 24	Struck buoy	San Francisco	Not stated
Rayon D'Or	July 7	Collision	Off Halifax	Not stated
Rhymney	June 25	Aground	Island of Bornholm	Floated
Seminole	June 13	Disabled	Bombay	Engine
Shirvan	June 3	Collision	Rotterdam	Port bow; plates
Swainby	June 23	Aground	Fortune Island	Floated
Senita	June 23	Aground	Not stated	Floated
St. Roch	June 7	Collision	Kruisschans Canal	Aft
Sutherlandshire Lass	June 12	Sprung leak	Inverness	Sank
Spigerborg	June 18	Collision	Copenhagen	Damaged
Sarah Pauline	July 7	Collision	Off Halifax	Badly
Shellmex 2	June 27	Disabled	Off Eastham Bar	Engine
Shelley	July 2	Collided whf.	Port Swettenham	Rudder
Taibu Maru	June 4	Aground	Yokohama	Engines-floated
Tamon Maru No. 18	June 4	Broken up	Yokohama	Total loss
Toyama Maru	May 31	Ashore	Reibun Island	Not stated
Tai Yang	June 6	Collision	Shanghai	Starboard side
Teceliadalet	June 17	Ashore	Sulina	Floated
Texas	June 19	Aground	River Neches	Floated
Tahiti	June 22	Struck reef	Papeete	Propeller
Ulva	June 21	Disabled	St. John	Propeller
Virgo	June 17	Collision	Ymuiden	Bows
West Ekonk	June 19	Struck obj.	Genoa	No. 2 hold
W. G. Pollock	June 26	Aground	Soo	Floated
West Hardaway	June 20	Disabled	Pensacola	Propeller
Wordsworth	June 19	Not stated	Constantinople	Forepeak
West Neris	July 2	Collision	Santos	Slight
West Cohas	June 26	Collision	Houston Channel	Slightly
Yomei Maru	July 3	Ashore	Kamaisha	Not stated

Marine Review

Reg U.S. Pat. Off.

The National Publication Covering the Business of Transportation by Water

January, 1930

Oil Burning Equipment

COEN

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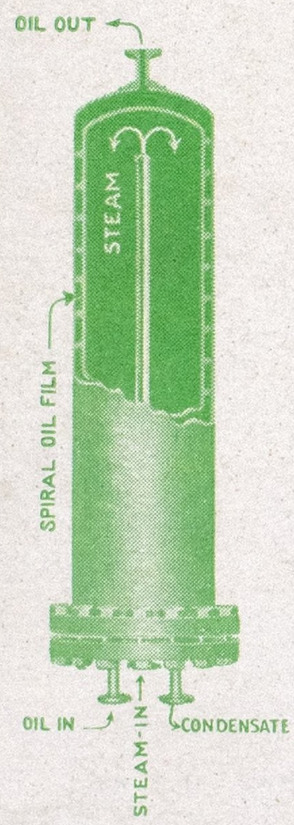

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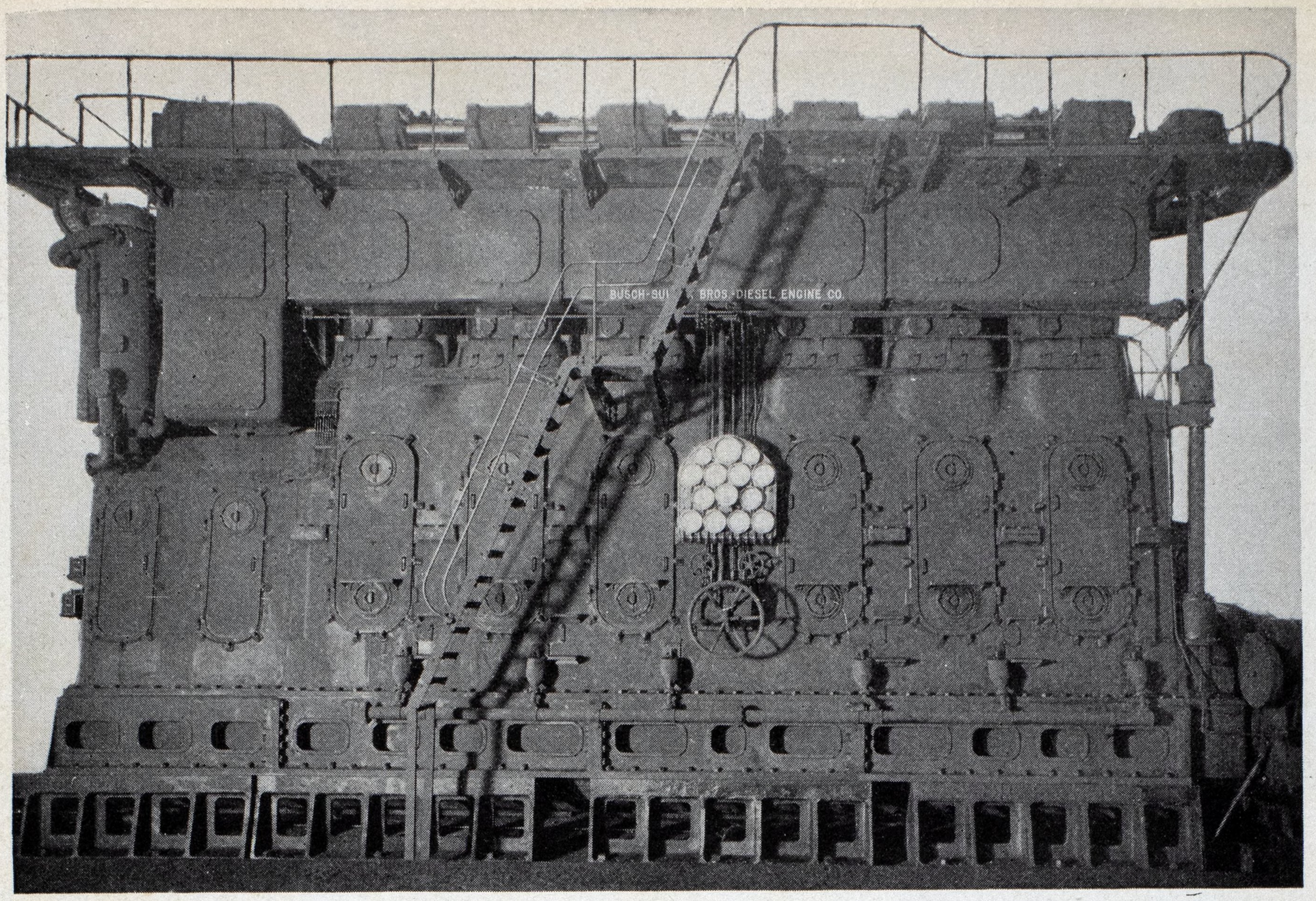

—WORLD CONSTRUCTION—

	Motorships	Steamers
6,000 to 8,000 tons	36	22
8,000 to 10,000 tons	33	11
10,000 to 15,000 tons	20	5
15,000 to 20,000 tons	10	0
20,000 to 25,000 tons	4	1
25,000 to 30,000 tons	1	2
30,000 and above	0	2
	104	43
All ships	1,531,753 G. T.	1,275,019 G. T.

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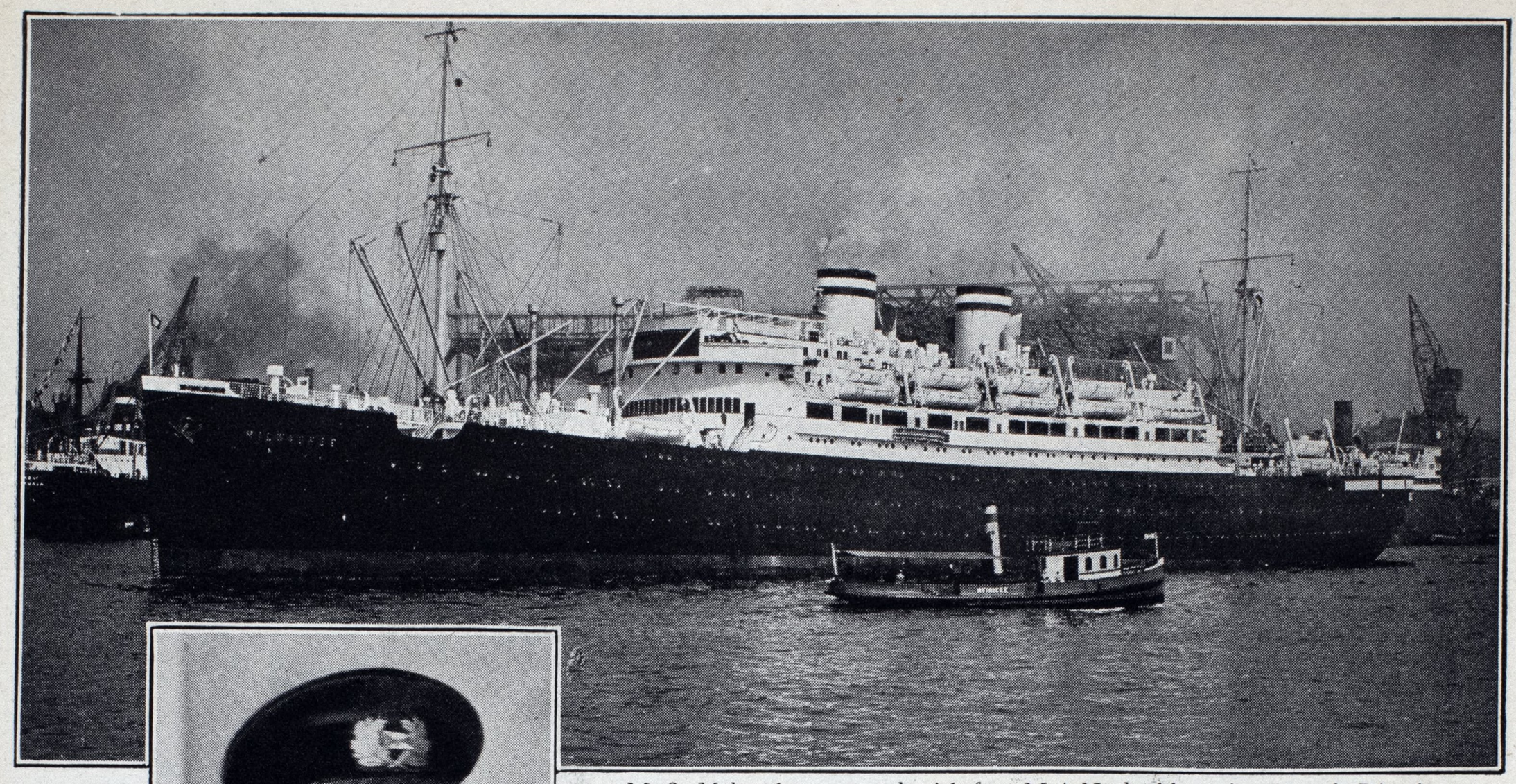

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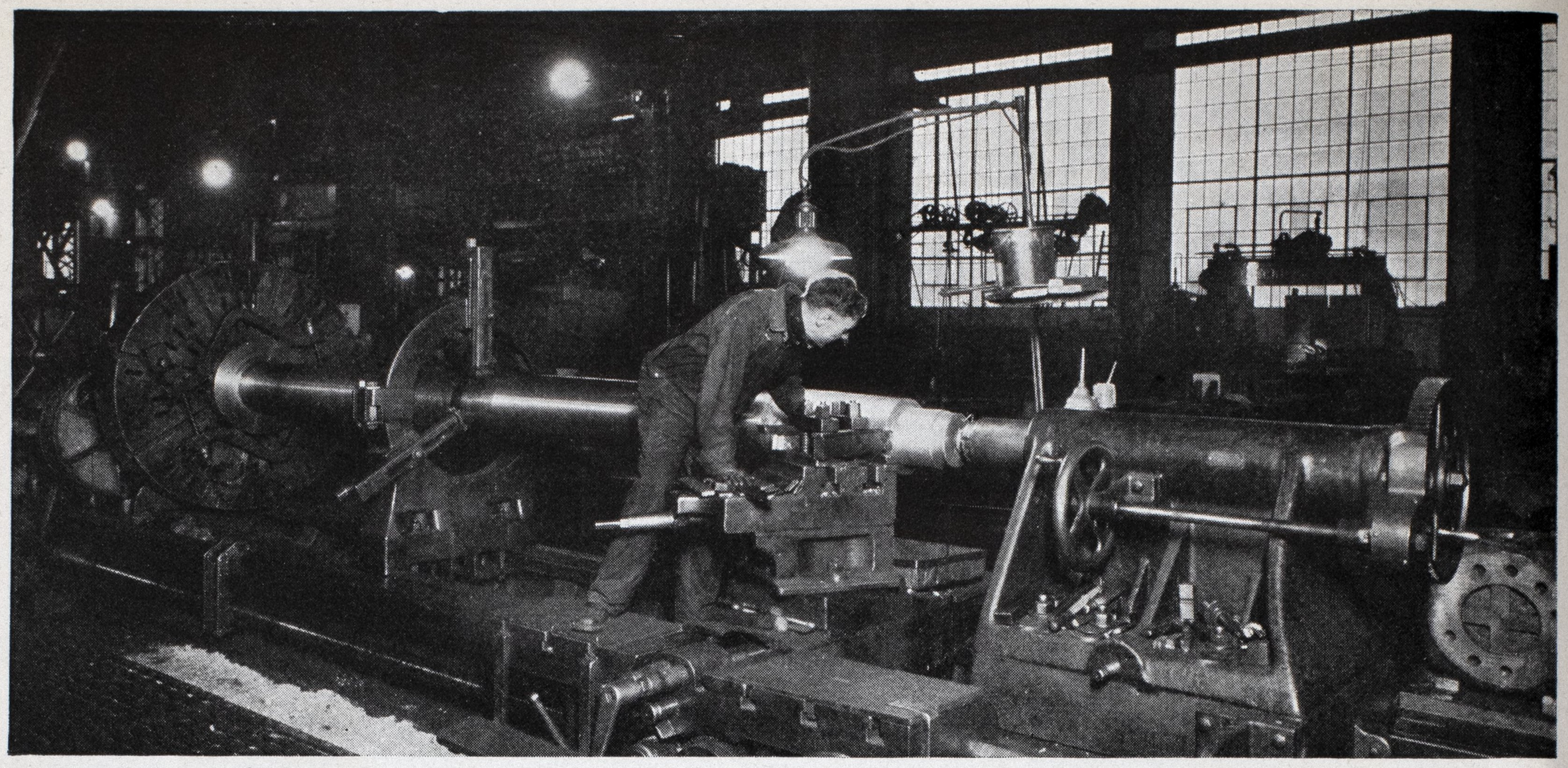

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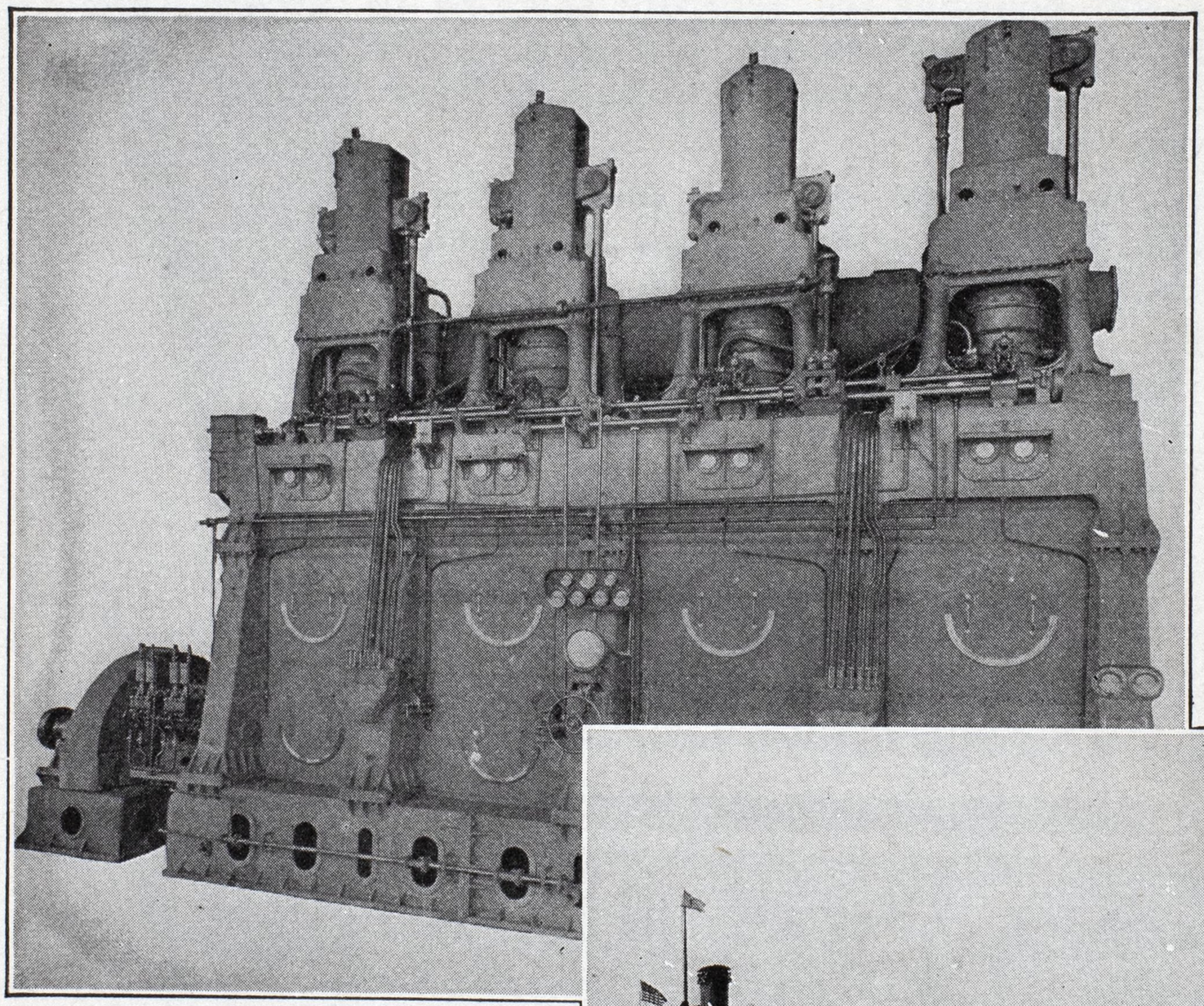
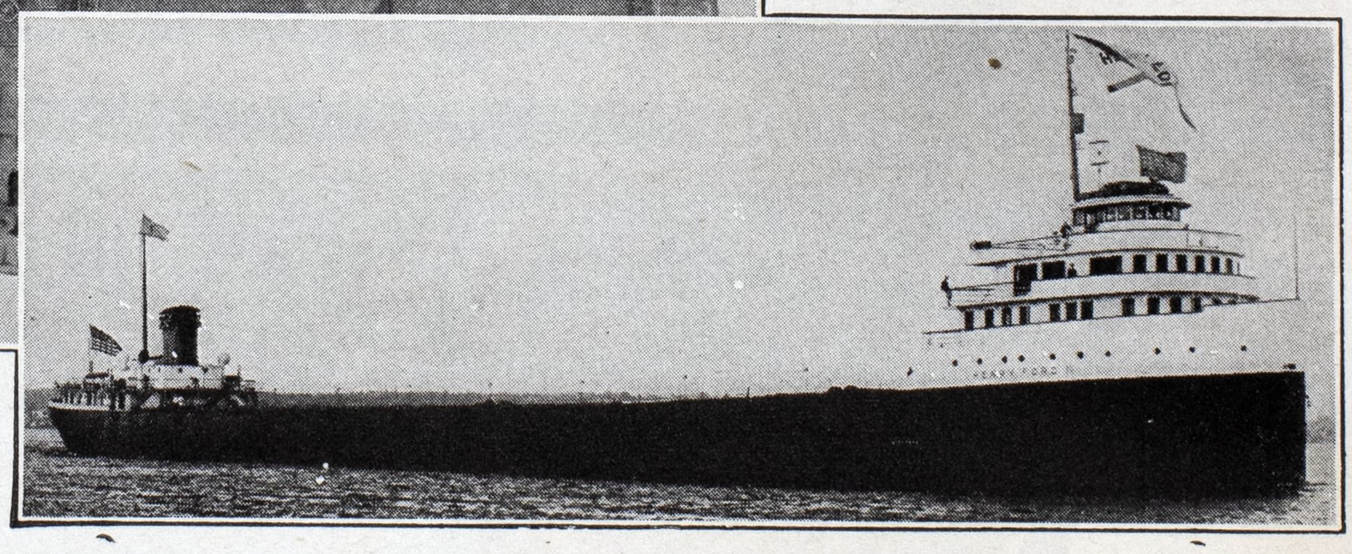


3000 S. H. P. Sun-Doxford Diesel Engines power the two motorships, "Henry Ford II" and "Benson Ford".



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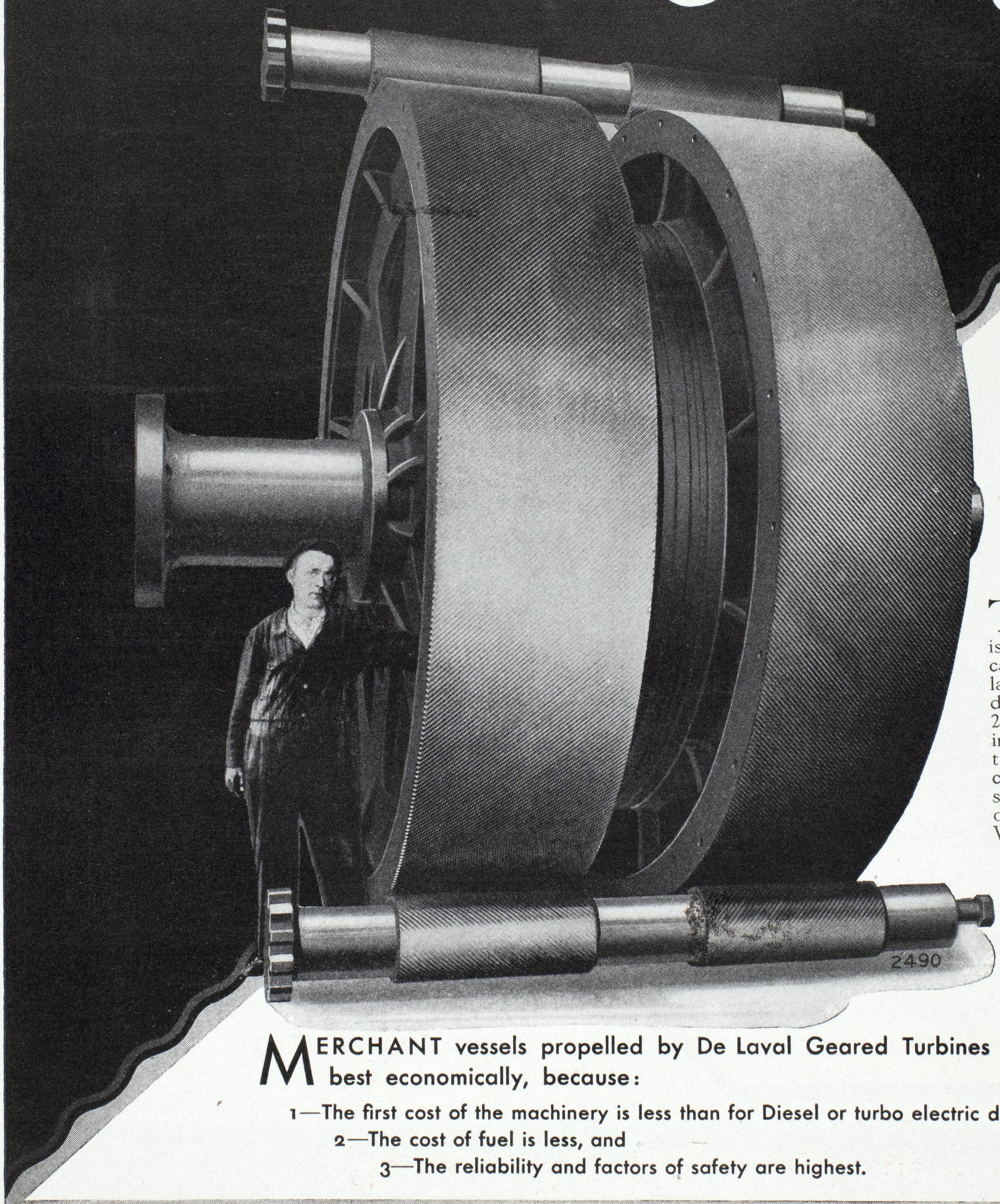

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The Bauer-Wach exhaust turbine being hoisted aboard S. S. Lena Luckenbach at Bethlehem's Simpson Works, Boston Plant.

The first Bauer-Wach turbine installed on an American vessel

Bethlehem has successfully completed the first installation of a Bauer-Wach Turbine on an American vessel. The turbine was installed on the S. S. Lena Luckenbach, at Bethlehem's Simpson Works, Boston Plant.

Bethlehem facilities and experience insure promptness and efficiency in the handling of marine repairs and reconditioning, and in the installation of new equipment.

BETHLEHEM SHIPBUILDING CORPORATION, LTD.
BETHLEHEM, PA.

General Sales Offices:
Atlantic Coast: New York: 25 Broadway Pacific Coast: San Francisco: Matson Bldg.
District Offices: Boston, Baltimore, San Pedro

BETHLEHEM

IN 17 GREAT AMERICAN PORTS

ARE COMPLETE RADIOMARINE SERVICE STATIONS—AND THERE ARE 15 RCA COASTAL STATIONS

Unequalled in completeness, reliability and economy, Radiomarine Service has been awarded supremacy.

Radiomarine Corporation, as a subsidiary of the Radio Corporation of America, enjoys the benefits of the vast research facilities of the associated companies that are a part of this great organization.

Today more ships of the American Merchant Marine are serviced by Radiomarine Corporation of America than all other concerns combined. The answer lies in Radiomarine's comprehensive service and its unquestioned responsibility.

Ship owners may now turn to Radiomarine Corporation of America for *complete*, efficient radio service, not merely the purchase of equipment, but its installation and maintenance. Also the detailing of experienced operators. Also checking and settling accounts. The procuring of Government licenses. Inspection at 17 ports. Every detail is now supervised by Radiomarine.

Radiomarine Service is backed by the world's greatest system for shore to ship communication, enabling owners and agents to keep in constant touch with their ships.

Complete RCA Service includes

1. *Equipment*—transmitting and receiving equipment of the vacuum tube type; radio direction finder.

2. *Service on equipment*—regular inspections at any of seventeen ports; maintaining at principal ports stocks of spare parts for repairs and renewals.

3. *Operators*—detailing of experienced operator personnel to the ships.

4. *Coastal stations*—Maintenance of fifteen coastal stations on the Atlantic, Pacific, Gulf and Lakes, for prompt, efficient handling of radio traffic.

5. *Accounting*—Checking and settling of accounts.

6. *Licenses*—Procuring of government licenses.

Radiomarine coastal stations are located at the following points:

Chatham, Mass.
New London, Conn.
East Moriches, L. I.
New York, N. Y.
Tuckerton, N. J.
Baltimore, Md. (city station)
Palm Beach, Fla.
Galveston, Tex.
Port Arthur, Tex.
Buffalo, N. Y.
Cleveland, Ohio
Chicago, Ill.
Duluth, Minn.
Los Angeles, Cal.
San Francisco, Cal.

Radiomarine storerooms and service stations in charge of radio men of long experience are located at the following ports:

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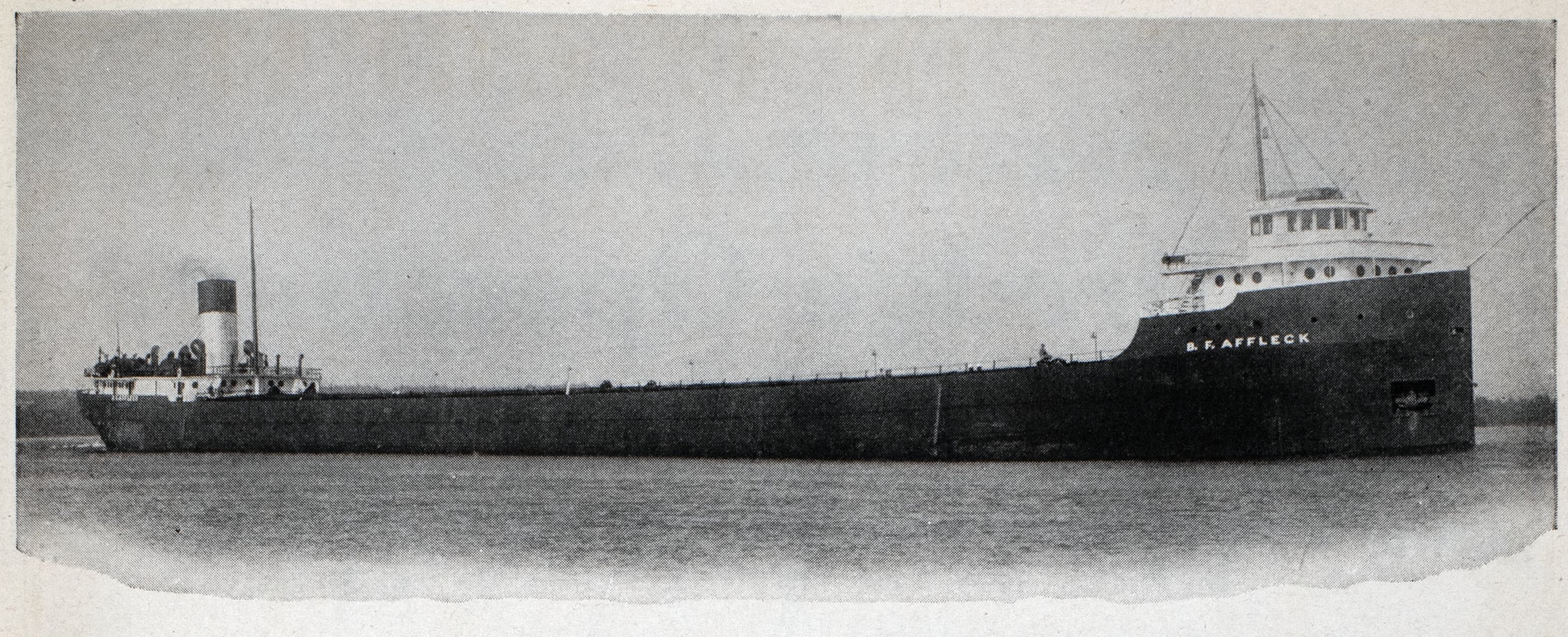
New York
Philadelphia
Baltimore
Norfolk
Savannah
New Orleans
Galveston
Port Arthur
Buffalo
Cleveland
Chicago
Duluth
Los Angeles
San Francisco
Seattle
Honolulu

RADIOMARINE CORPORATION
OF AMERICA
66 BROAD STREET
NEW YORK



B. F. AFFLECK

Finest Type of Great Lakes Cargo Carrier

S.S. B. F. Affleck owned and operated by the Pittsburgh Steamship Company, is a single deck bulk cargo vessel of the standard type built for the iron ore, coal and stone trade of the Great Lakes. Her molded dimensions are: Length overall, 604 feet, length between perpendiculars, 580 feet; width 60 feet and depth 32 feet. Capacity 12,000 tons.

A diversified experience, covering the construction of all types of ships, fully qualifies us to meet *your* requirements thoroughly and with despatch.

Some Other Ships We Have Built

Auto Ferry, LA SALLE
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Car Ferry, WABASH
Car Ferry, CHIEF WAWATAM
Car Ferry, ST. MARIE
Car Ferry, ANN ARBOR No. 5
Twin Screw Excursion Steamer, THOUSAND ISLANDER
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Toledo
Shipbuilding Company, Inc.
Toledo, Ohio

Important announcement *for* Dredge Operators.

WESTINGHOUSE complete Geared Turbine Pumping Units for dredges are now available. Each set includes a highly efficient steam turbine, reduction gear, pump, condenser and auxiliaries.

As a result you are afforded the opportunity of buying reliable and economical apparatus subject to undivided contractual responsibility.

Consult our nearest office for information on a geared turbine drive for your dredge.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
SOUTH PHILADELPHIA WORKS PHILADELPHIA, PA.
SALES OFFICES AND SERVICE SHOPS IN ALL PRINCIPAL CITIES

Westinghouse

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POSITION WANTED

Wanted — a permanent position on board ship as wheelsman. Have had experience in steering every type of merchant ship, can steer courses more accurately than others and use less rudder. Am sober, intelligent, strictly attentive to business, never ask for time off, do not talk back, am not affected by bill of fare or poor cooking, in fact do not eat at all. Wages wanted, only 54 cents per day for 24 hours service.

Sperry Gyro Pilot

Address
SPERRY GYROSCOPE CO., INC.
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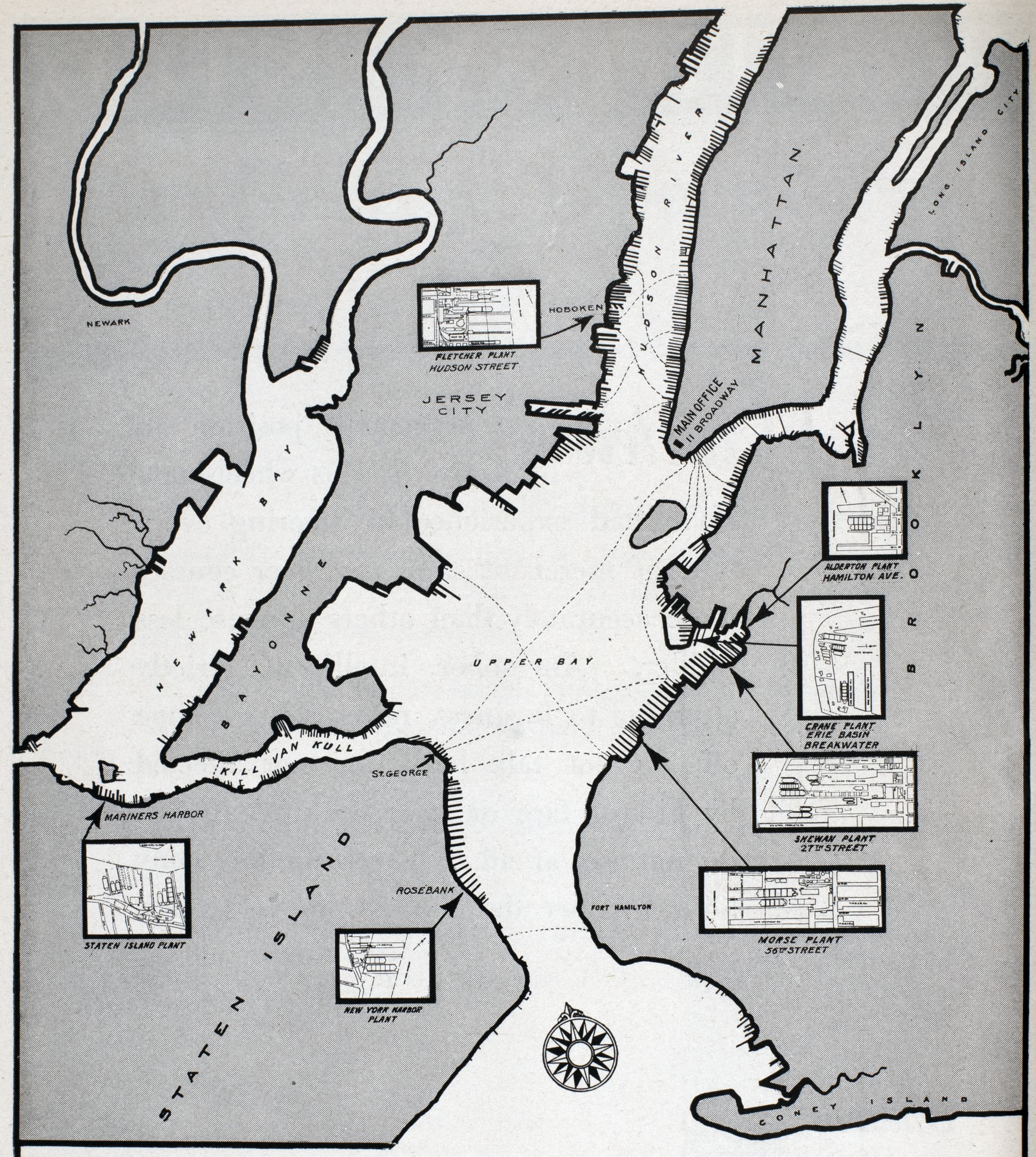
POSITION WANTED



The convenient location of its seven plants
is a great factor in United's

Prompt, Efficient Service

UNITED DRY DOCKS, Inc.

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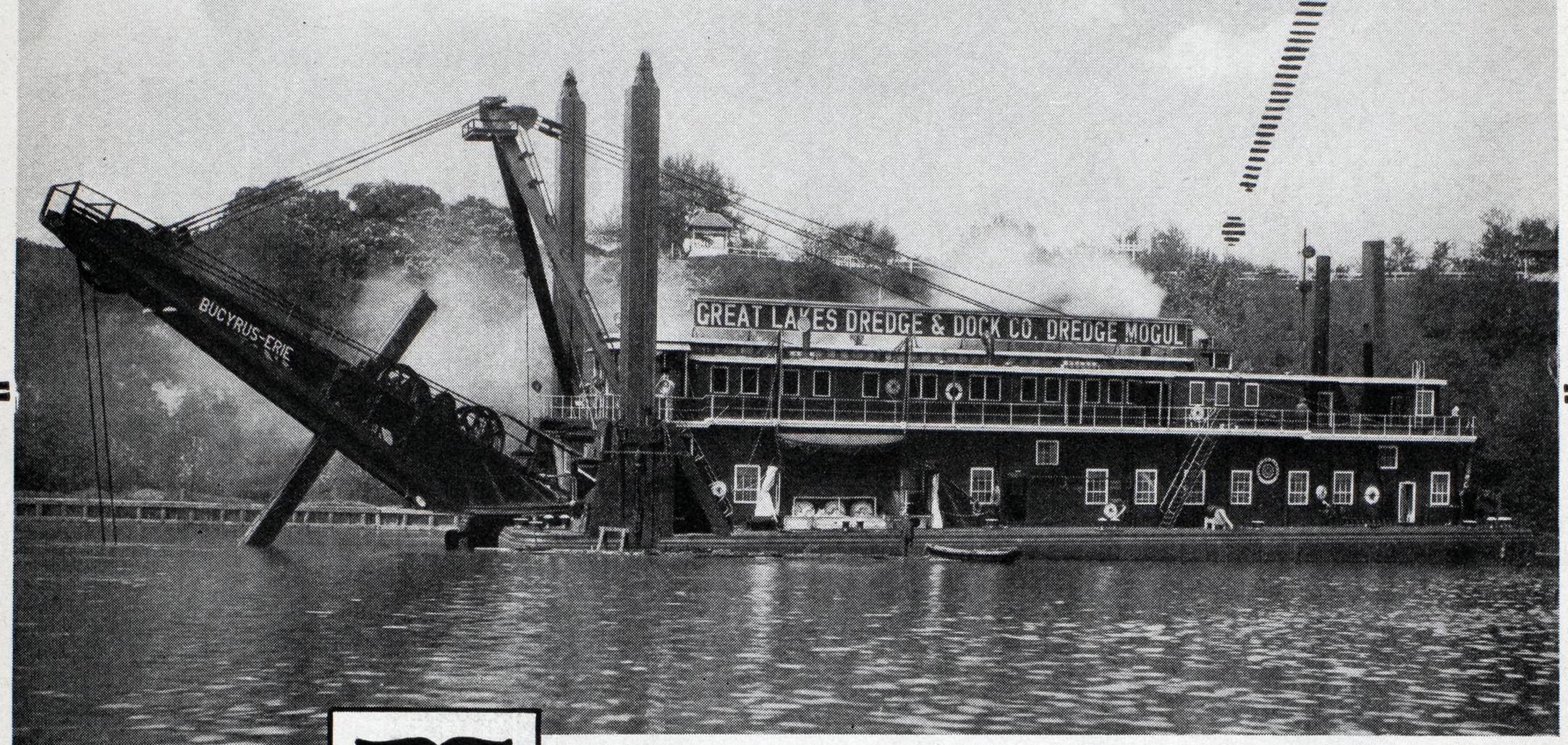
Another MANITOWOC PRODUCT



THE 8 cu. yd. Diesel Electric Dipper Dredge MOGUL was built for Great Lakes Dredge & Dock Co., Chicago. It is equipped with a 12 cu. yd. dipper for ordinary work but will heap up to a load of 16 yards in lighter materials. An 8 cu. yd. dipper is used for dredging rock. Maximum digging depth is 42 ft. of water. The MOGUL is 156′0″ x 42′6″ x 12′8″—1200 H.P., equipped with Bucyrus-Erie dredging machinery and Busch Sulzer Diesel engine. It has living quarters for a crew of twenty-three men.

It will pay you to consult Manitowoc when in the market for dredges, steel passenger and freight vessels, carferries, tankers, fire boats, sand suckers, tugs, scows, lighters, marine engines, marine boilers, ship auxiliary equipment, etc.

MANITOWOC SHIPBUILDING CORPORATION

Manitowoc, Wisconsin

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FRANK M. SCOTTEN, Mechanical Engineer
227 Military Rd., Dearborn, Mich.....Dearborn 447

GEORGE CAIN, General Yard Supt.
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JOHN GREIG, Docking Foreman
110 Walnut St., River Rouge, Mich.....Cedar 5558-W

FRED ERNST, Supt. Machine Shops
6230 Fort St., W., Detroit, Mich .....Cedar 0106

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Shipbuilders and Engineers

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River Rouge, Michigan

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Engine Works Equipped For General Heavy Machine and Foundry Work

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Complete Shipbuilding Dry Dock and Repair Facilities

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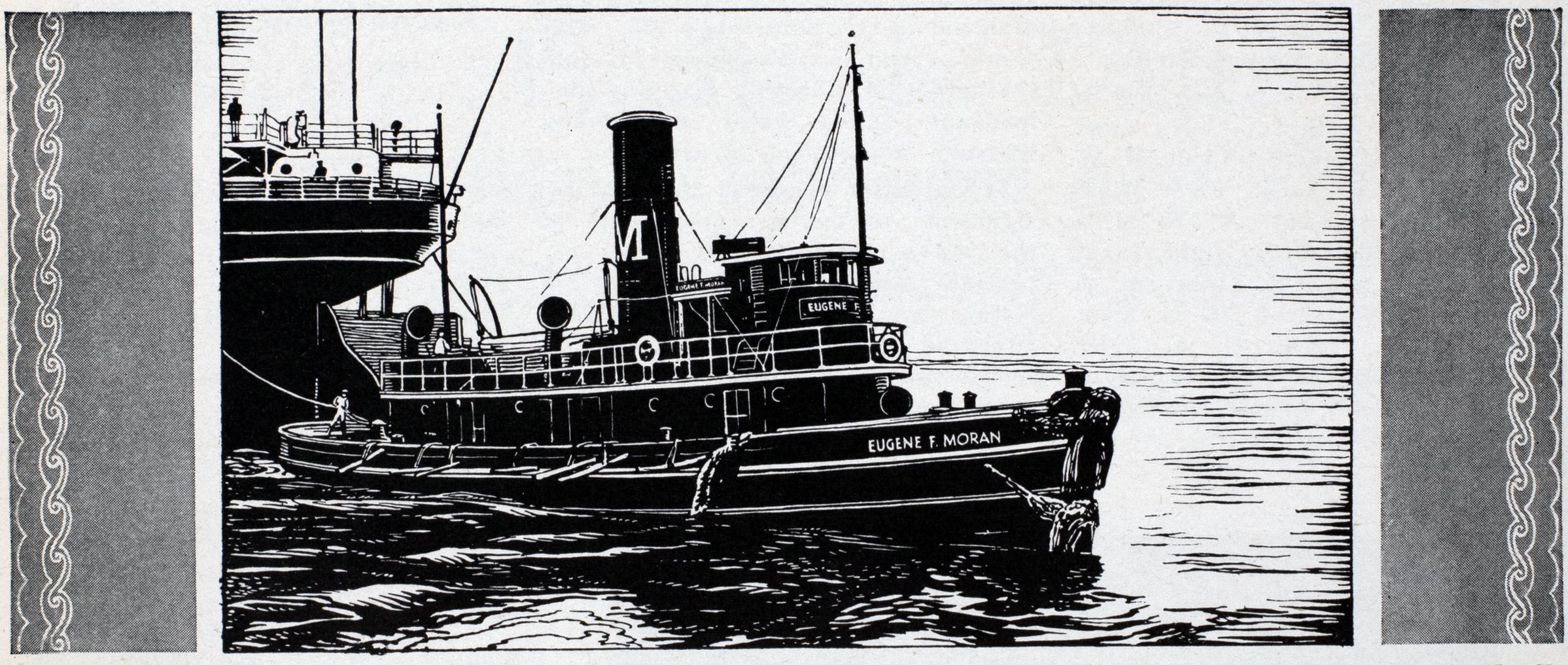
To accomplish "a good docking" within the maze of New York Harbor traffic and the unusual tidal and channel conditions that exist, requires an organization of experience and responsibility with generous and adequate equipment to meet every need of size and displacement of ocean going craft.

Ship Handling in New York Harbor

Moran Service has been handling



OVER SIXTY-SEVEN YEARS IN SERVICE

Day and Night Service Every Day and Night in the Year.

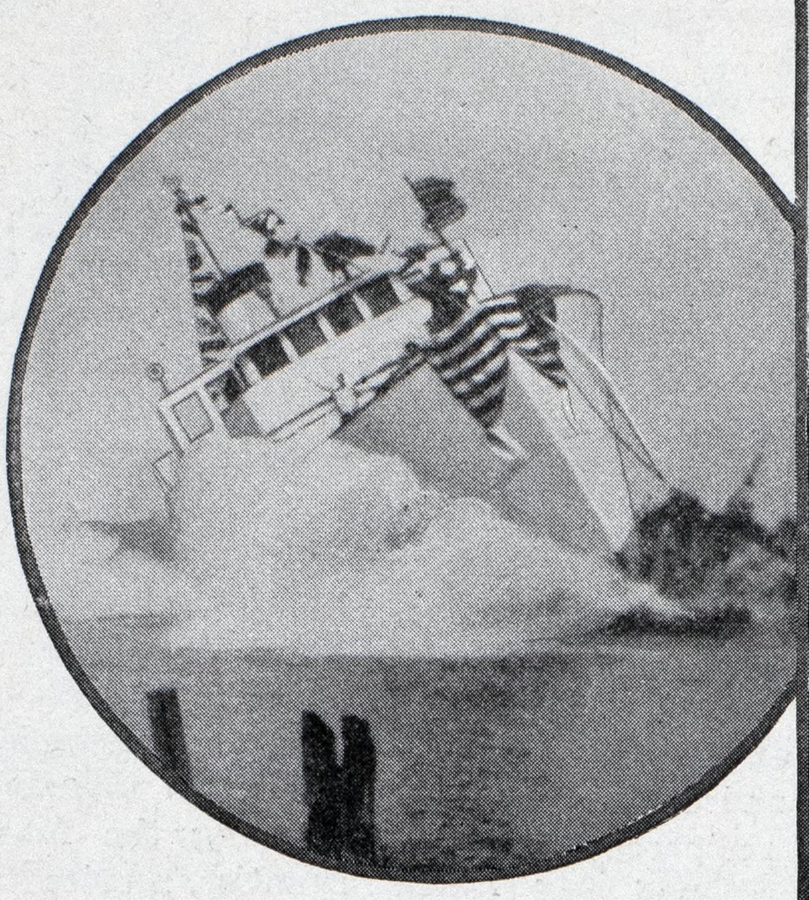
the vessels of prominent owners and operators in New York Harbor for three generations.

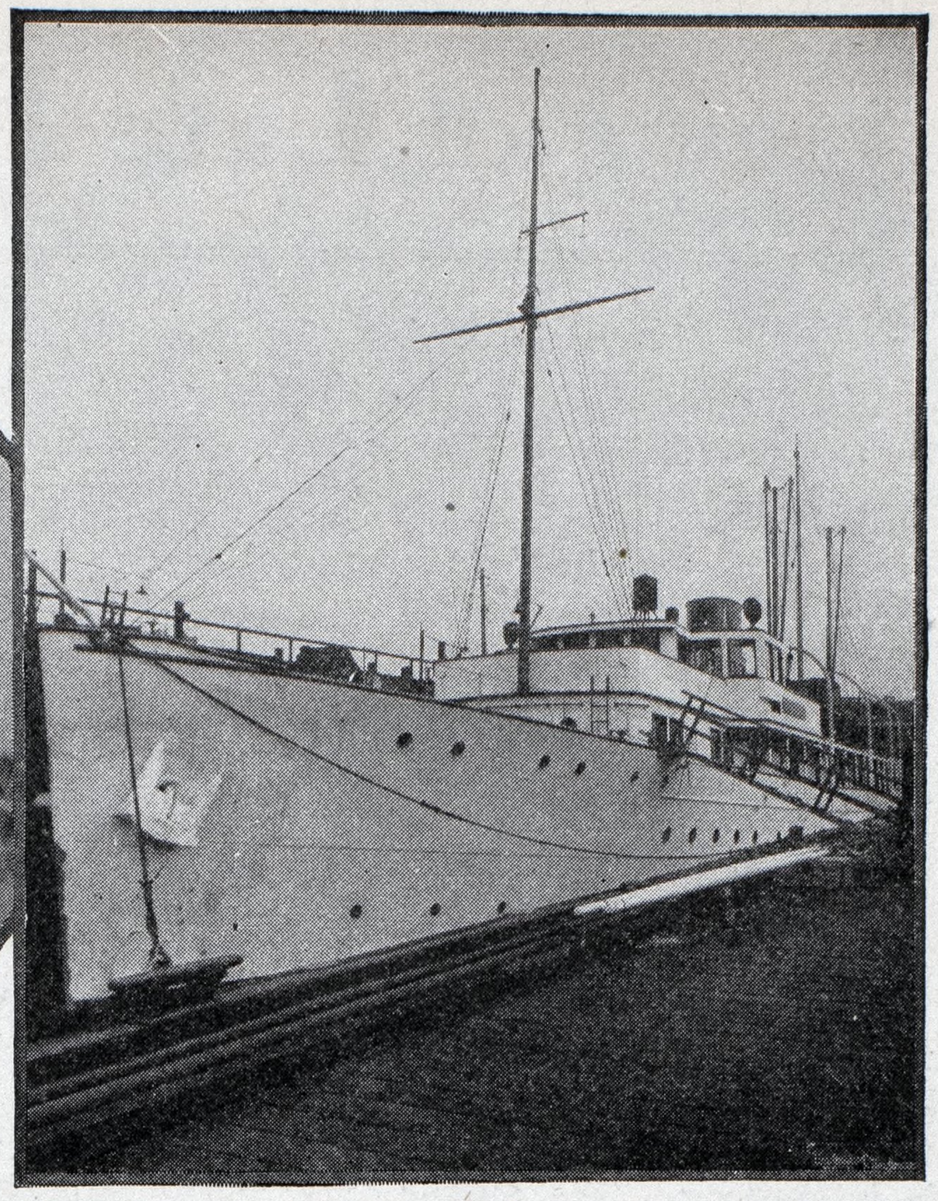
MORAN TOWING AND TRANSPORTATION COMPANY, INC.

17 Battery Place, New York—Whitehall 1340

MORAN Service

THE OLIVE K
BEING LAUNCHED





The Diesel Yacht "Olive K" owned by Mr. Chas. F. Kettering, Vice Pres., General Motors Corporation. Director, Research Laboratories.

A Fine Yacht is Launched

— — *Completely lubricated with TEXACO*

The launching of the Diesel Yacht "Olive K" marked the realization of Mr. Kettering's idea to have the finest ship of its class afloat.

We know the Olive K is that. Our lubricating engineers know every nook and corner of her — know the engine equipment and have cooperated with the ship's Chief Engineer, Francis M. Dainton in the selection of the TEXACO lubricants to be used on every part of the ship that needs oil.

The Diesel Engines are lubricated with TEXACO URSA OIL.

The Selection of TEXACO LUBRICANTS is a tribute to Texaco Quality

Its significance may best be shown by a brief description of the vessel:—

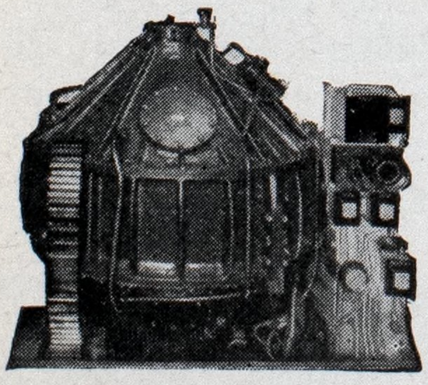
Length	160 ft.	(Water line)
Beam	26 ft.	
Draft	10 ft.	
Hull	(Steel)	

Twin Screw, Total Shaft H. P. 1000

Winton Diesel 4-cycle engine, 6-cylinder, solid injection, using the Salisbury System of fuel injection, 500 B. H. P. each. Bore 12", Stroke 16", R. P. M. 350, single-acting.

These engines are equipped with A. C. Generators in place of fly wheels, built by the Ideal Electric Company, Mansfield Ohio. They are of the fly wheel type, 3-phase, 70 cycle at 220 volts separate excited.

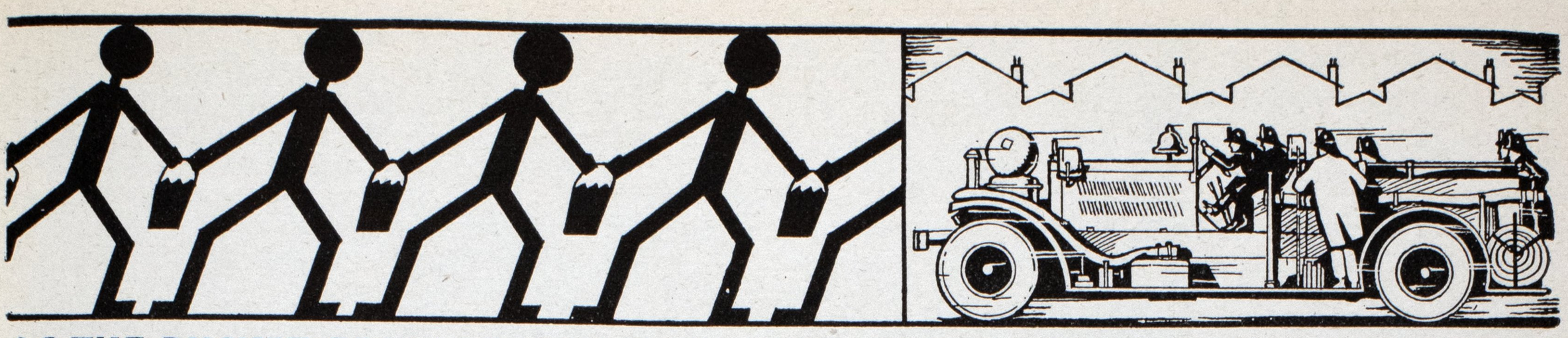
The use of A. C. Generators is to tie in both engines at the same revolutions, thereby eliminating all vibration. These units are controlled by a special A. C. Panel, equipped with a motor driven synchroscope. The synchronizing consists of 2-Delco contact heads driven at cam shaft speed, connected through a Delco high tension coil. Given intermitting sparks on a disk through a neon light, synchronism can be obtained on any firing order of cylinders. All couplings, shafts and propellers are set the same. A Sperry Gyroscope Stabilizer is installed, turning a rotor 6 ft., in diam. 7-tons at a speed of 1800 R. P. M., also a Sperry Metal Mike, Master Compass, Radio Direction Finder, Electric Log, Fathometer, Course Indicator, Dial Automatic Telephone System (electric piano, victrola and radio connected to and operated by telephones). Vessel is equipped with A. C. Motor Gen. Sets, eliminating the use of auxiliary engines at sea.



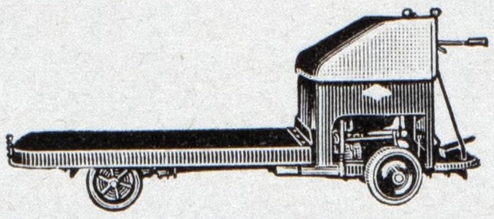
The Sperry Gyroscope Stabilizer Equipment Installed on the Olive K. TEXACO Lubricated.

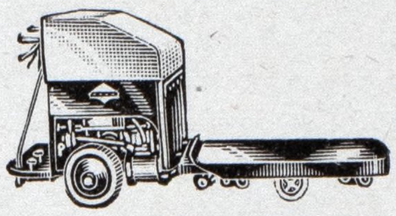
There is a TEXACO Lubricant for every purpose aboard ship — from the stately pleasure yacht to the greatest ocean liner. Call up The Texas Company first!

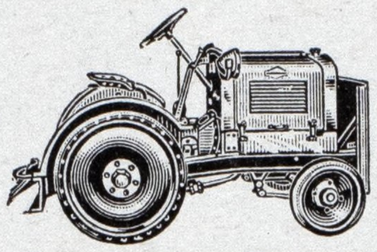
THE TEXAS COMPANY
MARINE SALES DIVISION
17 Battery Place New York City
Offices in Principal Cities

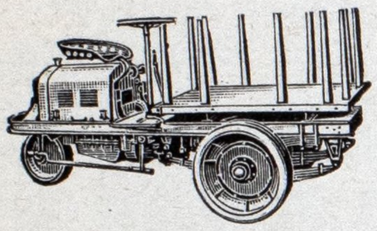


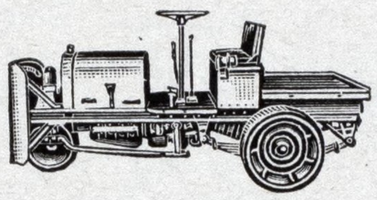
AS THE BUCKET BRIGADE HAS BEEN REPLACED BY THE MODERN FIRE ENGINE

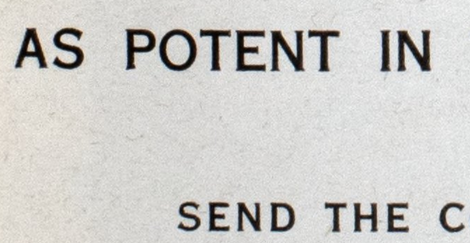
CLARK TRUCLIFTS  HAVE ELIMINATED RE-

HANDLING IN INDUSTRIAL HAULING.  LOADED SKIDS

OR PLATFORMS ARE PICKED  UP, HAULED AND DEPOSITED

 IN JIG TIME, — WHICH MEANS AT LOWEST COST. CLARK

EQUIPMENT CREATES HAULING  SYSTEMS ADAPTED

 TO ANY NEED, ABSORBING THEIR OWN

EXPENSE. YIELDING EXTRA PROFIT.

CLARK TRUCTRACTORS

ARE GASOLINE PROPELLED, THEREFORE COMPETENT FOR 24 HOURS CONTINUOUS SERVICE, — AND JUST AS POTENT IN THE LAST HOUR AS THE FIRST.

SEND THE COUPON FOR DESCRIPTIVE BULLETINS

CLARK TRUCTRACTOR COMPANY

BATTLE CREEK, MICH.

CLARK TRUCTRACTOR COMPANY
BATTLE CREEK MICH.

PLEASE SEND INFORMATION ON CLARK TRUCTRACTORS.

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COMPANY.....

ADDRESS.....

MR-1-30

THE OLD WAY

THE ELWELL-PARKER WAY

Gear Your Freight Handling to today's *high speed transportation*

MODERN ships, fast trains and speedy motor trucks stand needlessly idle at many docks and terminals while shipments are being transferred by methods that were considered modern 50 years ago.

But electric trucks will gear terminal handling facilities to today's high speed transportation.

For example, at one marine terminal, the cost of handling cased fish was actually 15 cents per ton more than the shipper paid for the service. An Elwell-Parker lift tructor was put on the job and the cost of handling the same shipments was reduced 27 cents a ton, so that a *profit* of 12 cents per ton resulted. A single Elwell-Parker Tructor carrying one trailer and pulling three, transports 16 boxes of fish weighing 500 lbs. each at one trip from warehouse to ship. It previously required 16 men to move the same number of cases, one case at a time.

Perhaps similar savings can be made at your *terminals*. An Elwell-Parker Engineer is ready to study your requirements whenever you say and to lay before you the actual figures of the possible results, without obligation on your part.

ELWELL-PARKER
offers this advantage

The power can be applied to the drive wheels before the brake is released. This feature makes it possible to stop and start a fully loaded E-P Tructor on a ramp without danger of "slipping back." Your *Safety* Committee will appreciate the importance of this advantage.

ELWELL-PARKER ELECTRIC COMPANY

Designers & Builders of Electric Industrial Trucks, Tractors & Cranes for 24 Years

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Tructors

More Time at Sea . . . Less at the Docks

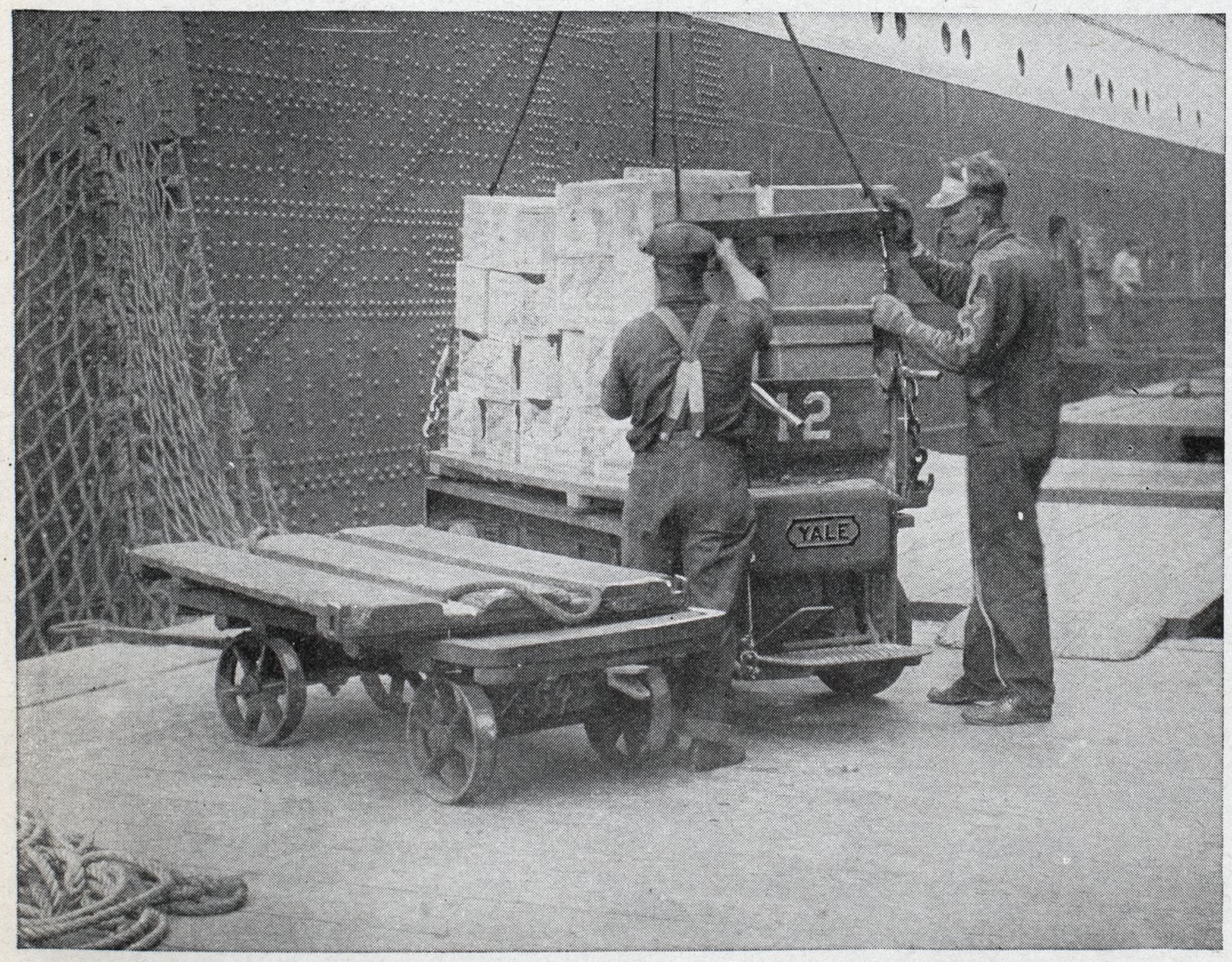
Fast-moving electric trucks speed up loading and cut docking time

THE quicker a ship can be loaded and gotten under way—the greater is its earning capacity. This doesn't necessarily mean an increased working force, for with fast-moving, powerful, dependable electric industrial trucks, bigger cargoes can be handled with a smaller number of men.

How one firm saves money

One important shipping company operating from New York City to Florida, keeps its ships at sea as much of the time as possible. Carrying freight is more profitable than loading and unloading it. Docking time is cut to from 24 to 36 hours by the use of electric trucks. In spite of the difficult slopes to gangways caused by the tides, these trucks keep busy and speed the ships back to the high seas.

You, too, can save money and valuable time with Exide-Ironclad-equipped electric industrial trucks. Skilled engineers have specially designed the Exide-Ironclad to furnish steady, even power under the toughest conditions of industrial truck service. Exide-Ironclads are economical at the charging panel, taking current quickly and with little waste. They maintain a consistently high voltage that gives power to make the hardest haul seem easy. And backed by forty-two years' experience in building batteries for every purpose, Exide-Ironclads are designed to give years of trouble-free performance.



Write for complete details

A letter brings your copy of Bulletin 160-R. It tells you about the many uses of dependable, efficient Exide-Ironclad Batteries in different industrial truck services, and shows how savings may be effected.

Industrial trucks powered with Exides move cargoes quickly . . . cut docking time . . . increase earning capacity of ships.

Exide
IRONCLAD
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

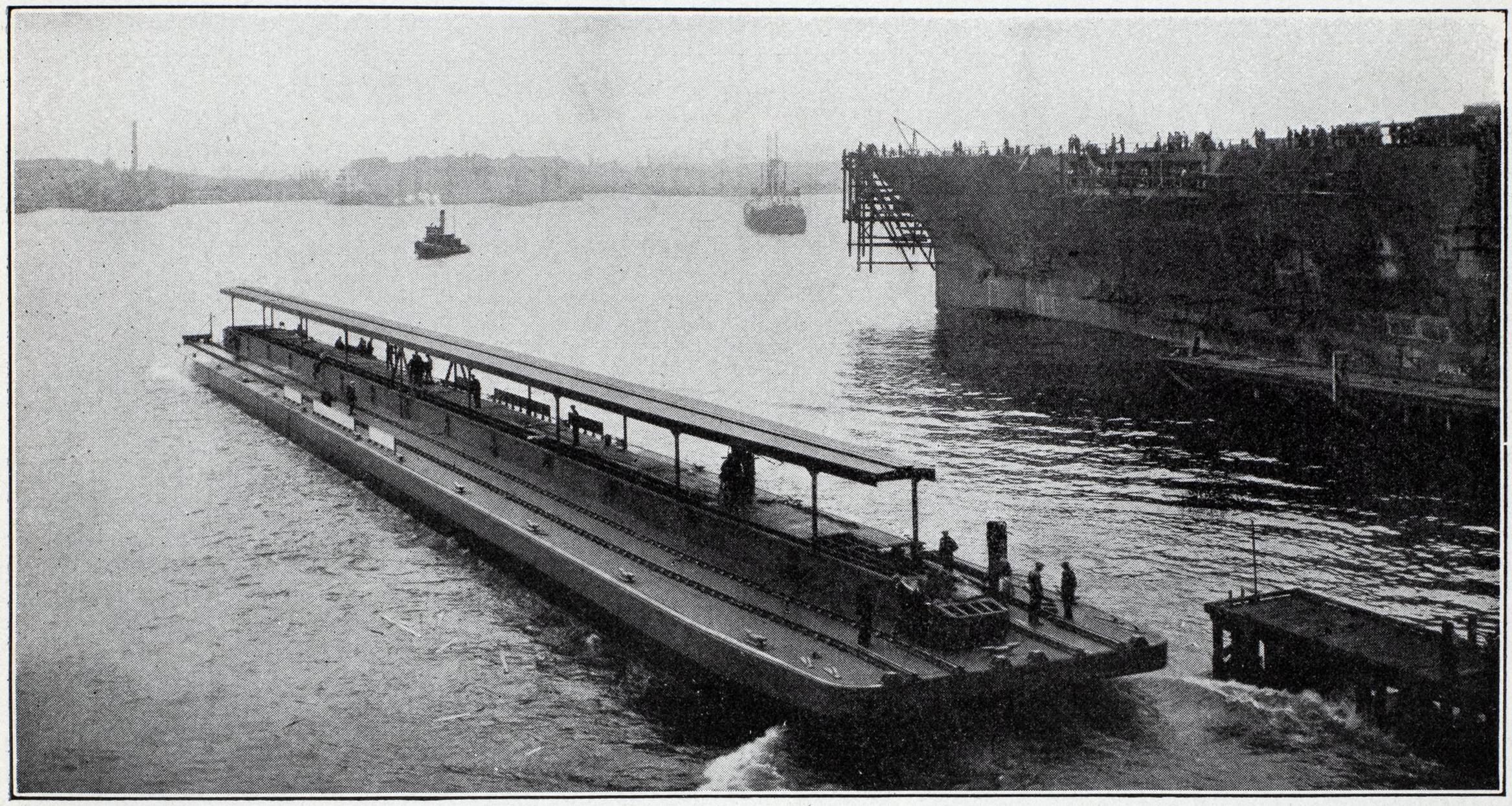
Exide Batteries of Canada, Limited, Toronto

THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE

NEW YORK SHIPBUILDING COMPANY

Miscellaneous Vessels

CONTRIBUTING to the diversity of shipbuilding experience gained by NEW YORK SHIPBUILDING COMPANY during the thirty years of its development, are 234 small vessels of 17 different types. Though small by comparison with many of the merchant and naval vessels built here, these miscellaneous craft are important by reason of the many special problems of ship construction met with in their production.



366 Ft. Carfloat Built for the New York Central Railroad Company

NEW YORK SHIPBUILDING COMPANY

has built 109 carfloats, totaling approximately 6 miles in length, for the following railroad and terminal companies

Baltimore & Ohio Railroad
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New York, New Haven & Hartford R. R.
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Reading Railroad
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NEW YORK SHIPBUILDING CO.

Main Office and Works:
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Sail . . . Ship

under the Stars and Stripes

Not solely on patriotic grounds but primarily because of the pre-eminent service this line extends. A perfect passage for every purse . . . a fast express freight service in the North Atlantic. Your own ideas of fine food . . . fine comfort . . . fine accommodations in travel; your own ideas of efficiency and intelligence in the handling of freight. American standards from stem to stern!

This service is most comprehensive. You can book passage direct to Germany, to England, to Ireland or to France. You can travel swiftly or leisurely . . . in luxury or with comfortable simplicity. On the Leviathan, world's largest liner . . . or in one of five magnificent but modest-priced cabin ships, George Washington, S. S. America, S. S. Republic, President Roosevelt and President Harding. Or direct from New York to London weekly on one of the express mail and cargo vessels of the American Merchant Lines: American Banker, American Farmer, American Merchant, American Shipper and American Trader. See your nearest agent or one of our many offices for rates, accommodations and sailings.

UNITED STATES LINES

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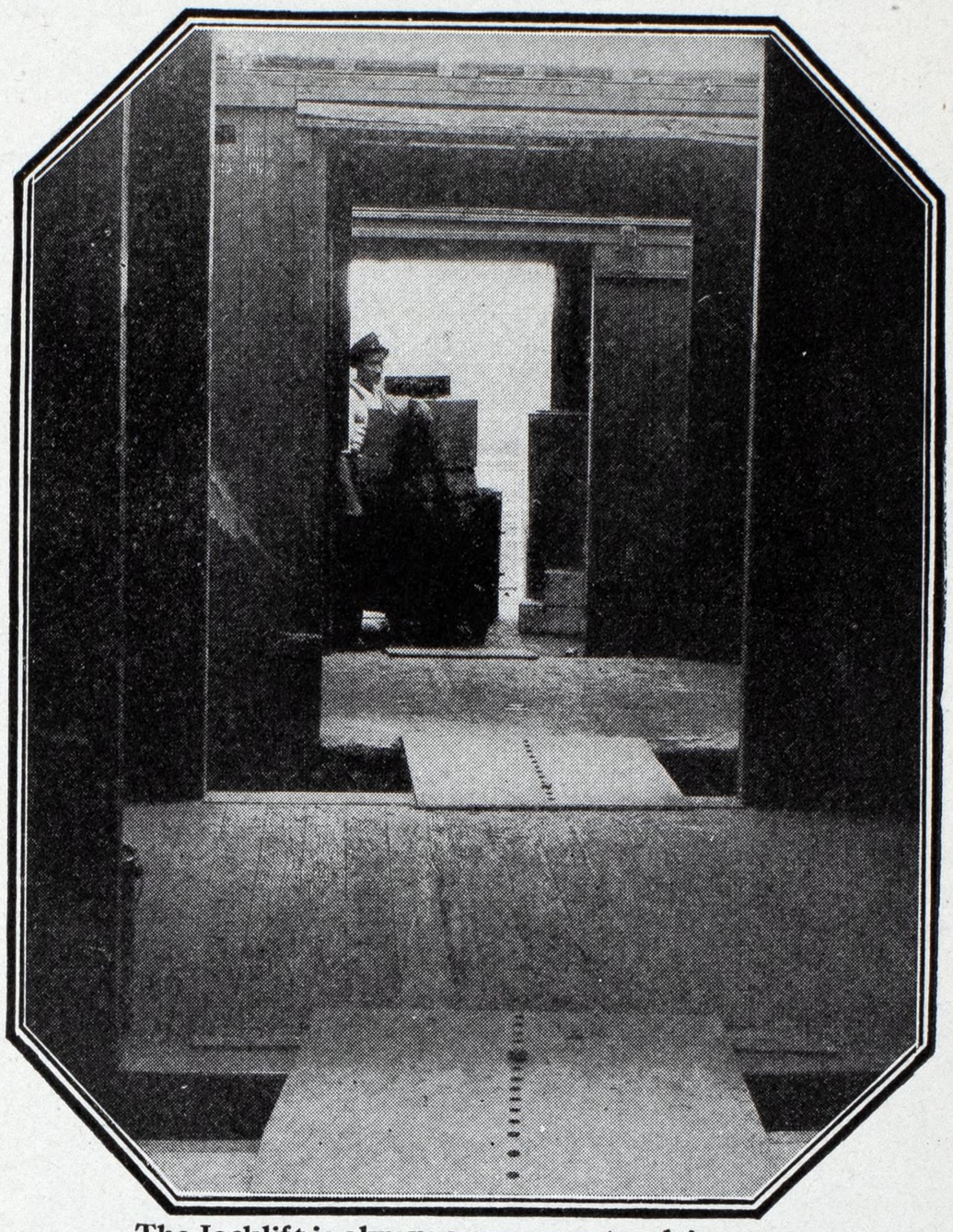
STEEL BOXES AND SKID PLATFORMS

Shipments are handled with less labor and in quicker time where Truscon Steel Boxes, Skid Platforms and Trucks are used. They are furnished in types and sizes to meet every condition. Our engineers will give full information and useful suggestions.

TRUSCON STEEL COMPANY
PRESSED STEEL DIVISION
6100 Truscon Ave. Cleveland, Ohio

PRESSED TRUSCON & DRAWN STEEL

REDUCE YOUR LOADING TIME



The Jacklift is always a one-man truck in every capacity. Here we see a Jacklift and Skid Platform employed in unloading a car. The "high lift" helps to clear inclines, while the lift with the "handle at any angle" allows operation of the Jacklift in cramped quarters.

WITH LEWIS-SHEPARD LIFT TRUCKS AND SKID PLATFORMS

Ship on skid platforms and speed up your handling of goods between docks and warehouses. Lewis-Shepard Arc-Welded Skid Platforms and Master Lift Trucks will cut your loading and unloading costs 20 to 50% and more. The Lewis-Shepard Jacklift lifts higher, enabling the load to clear inclines without dragging; lifts easier, whether the load is one ton or five tons; elevates the load from any angle within an arc of 270°, enabling the operator to maneuver easily around posts and in corners. These and many other superior features make the Jacklift *the* truck for Marine Shipping Work. Let us show you how to cut your handling costs.

For Information Write

LEWIS-SHEPARD COMPANY
170 Walnut Street Watertown Station
Boston, Mass.

LEWIS-SHEPARD

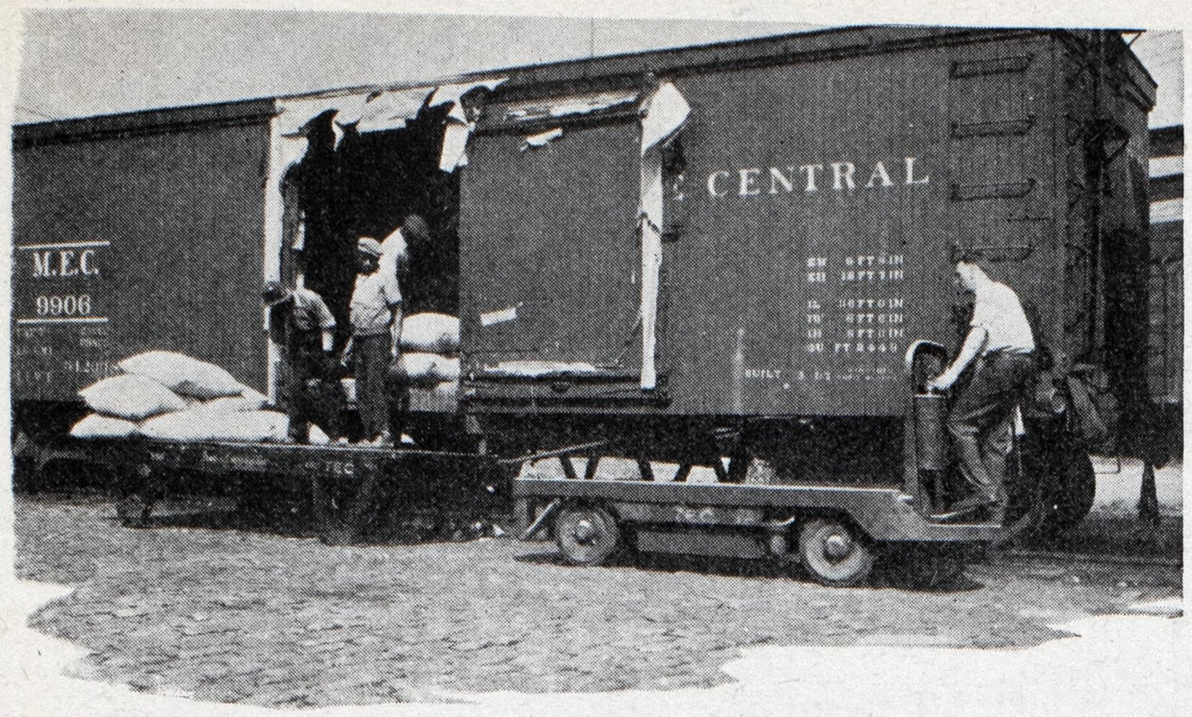
Many Large Manufacturers are Shipping their Goods on Lewis-Shepard Skid Platforms

DIXON'S Flake Graphite

Recognized the world over as the standard lubricating graphite. Used alone, or as an auxiliary lubricant with oils and greases, Dixon's Flake Graphite materially increases the operating efficiency of every machine it is used on.

Even tho Dixon's Flake Graphite has been used by thousands of mechanics, maintenance men and engineers for more than 100 years —do you know the . . . how . . . and . . . why . . . of Dixon's Flake Graphite lubrication?

Joseph Dixon Crucible Co.
Jersey City, N. J.



VERSATILITY

TEC Equipment is pre-eminent for loading and unloading ships. If railroad track is not available at shipside, TEC trucks can haul big tonnages on distances under a mile at costs lower than by other methods. TEC Trucks eliminate distance between ship and railroad car or ship and warehouse.

Terminal Engineering Co.

17 Battery Place, New York, N. Y.

LOS ANGELES

SHIPBUILDING & DRYDOCK CORPORATION

SAN PEDRO, CALIFORNIA

40 Acres of Modern Shipbuilding Equipment
To Meet Every Requirement

Floating Drydock—12,000 Tons Capacity

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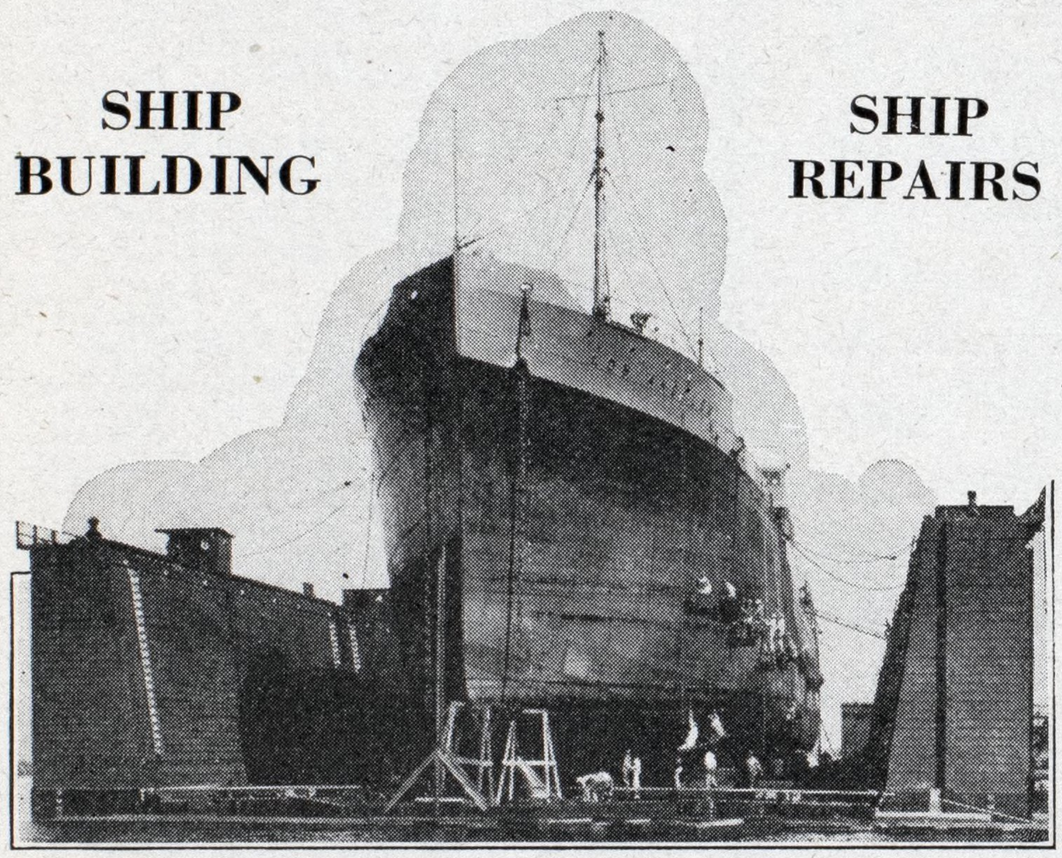

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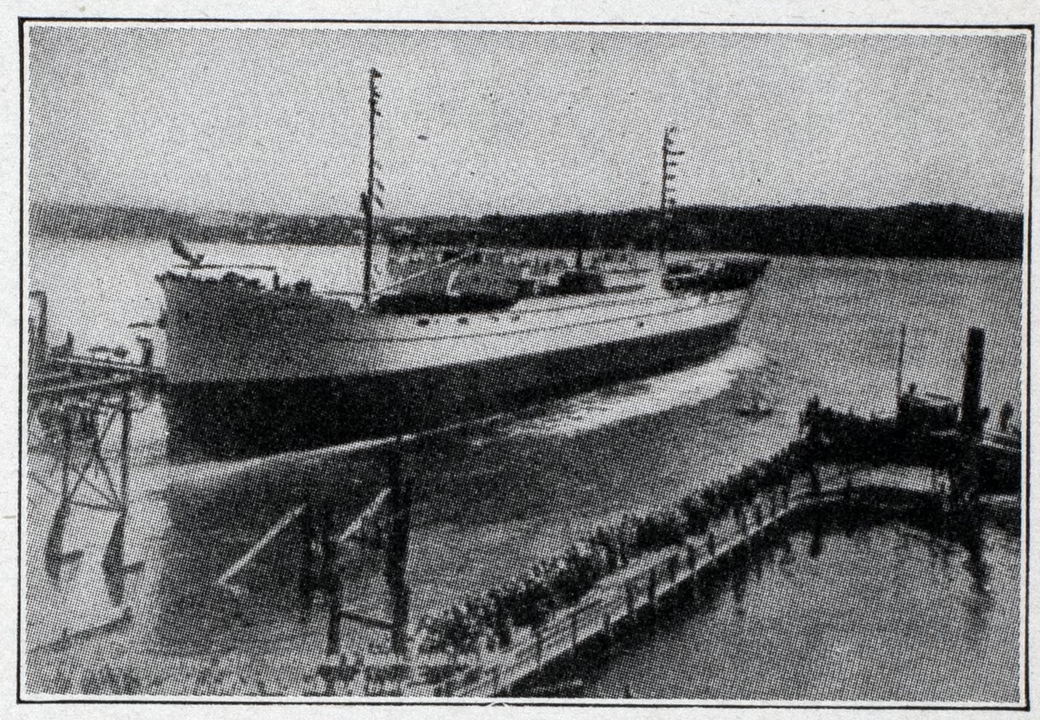

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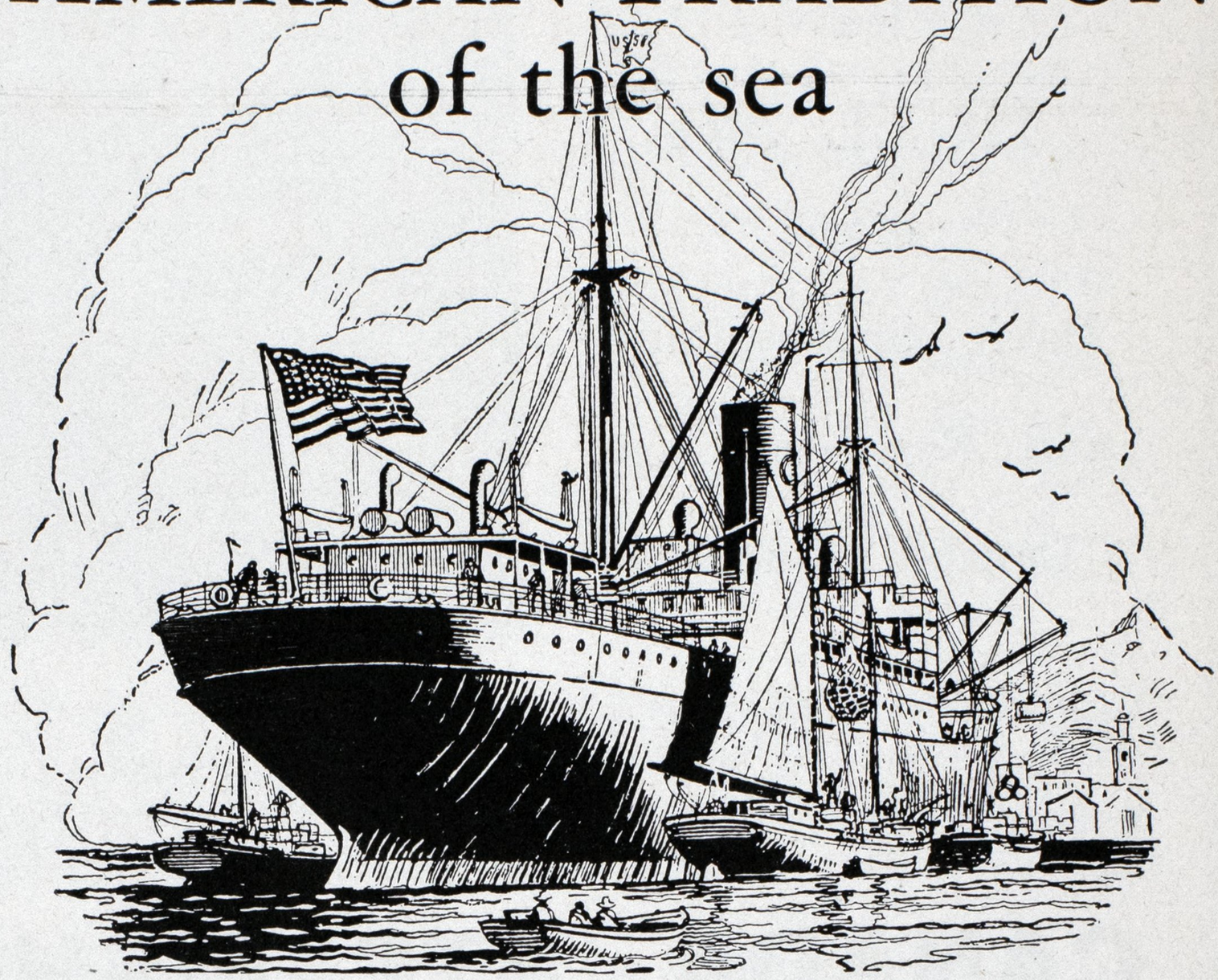

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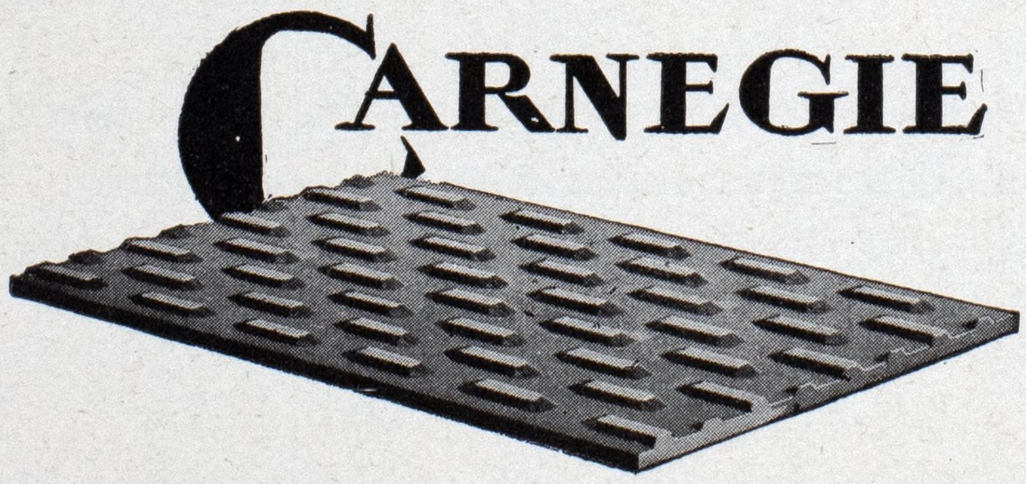

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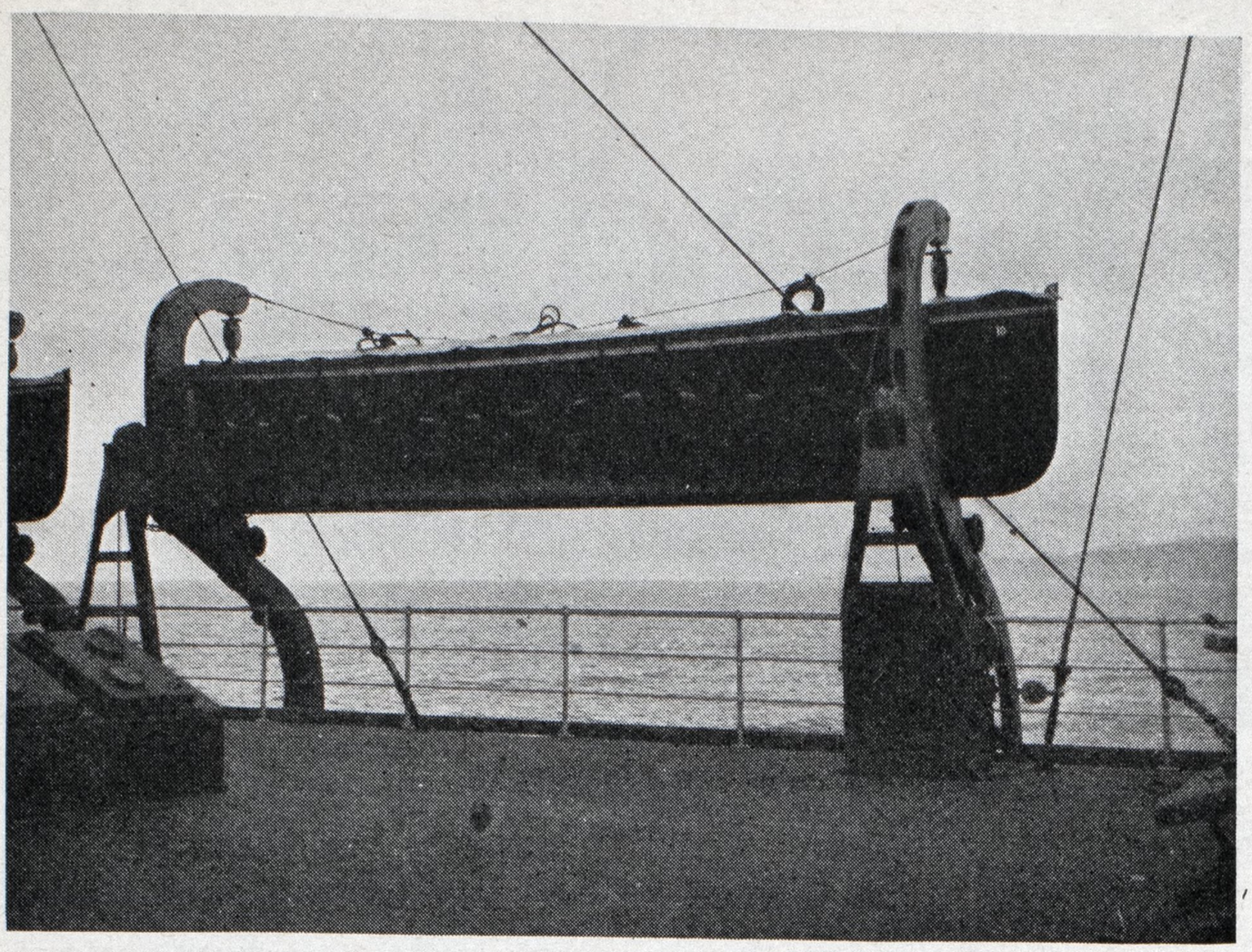

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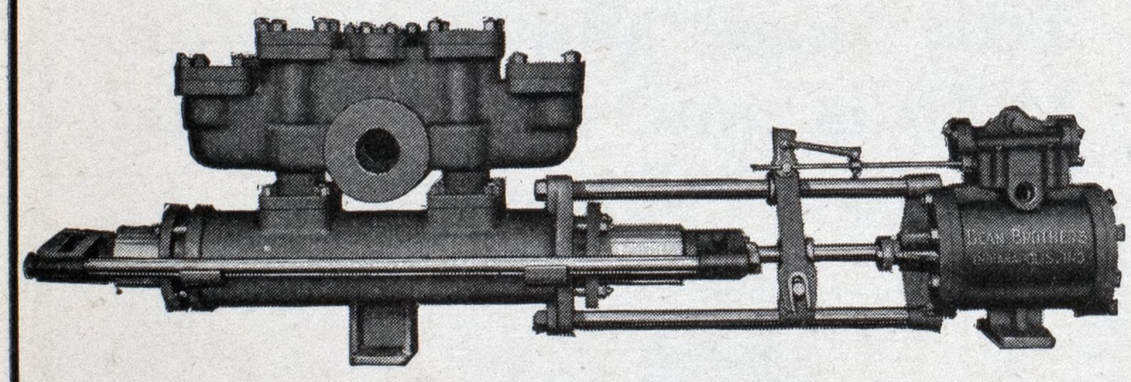

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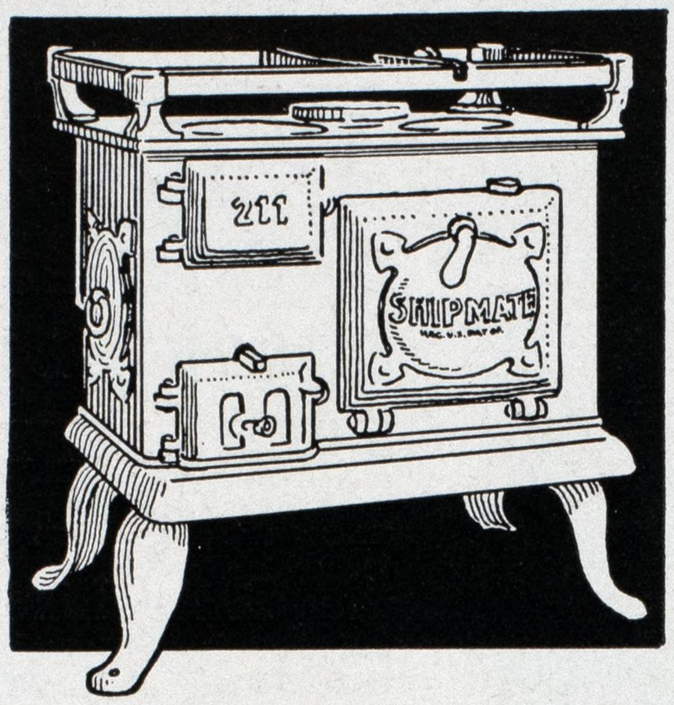

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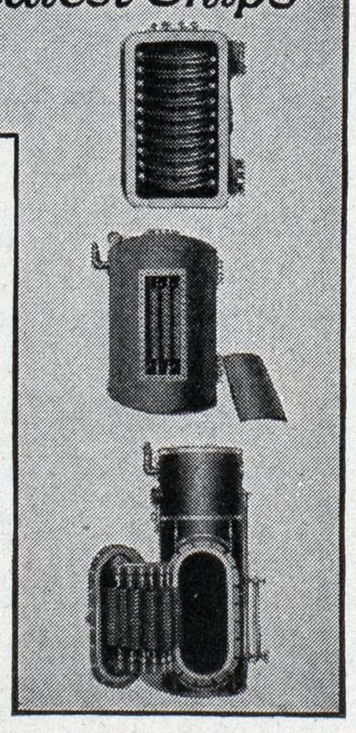

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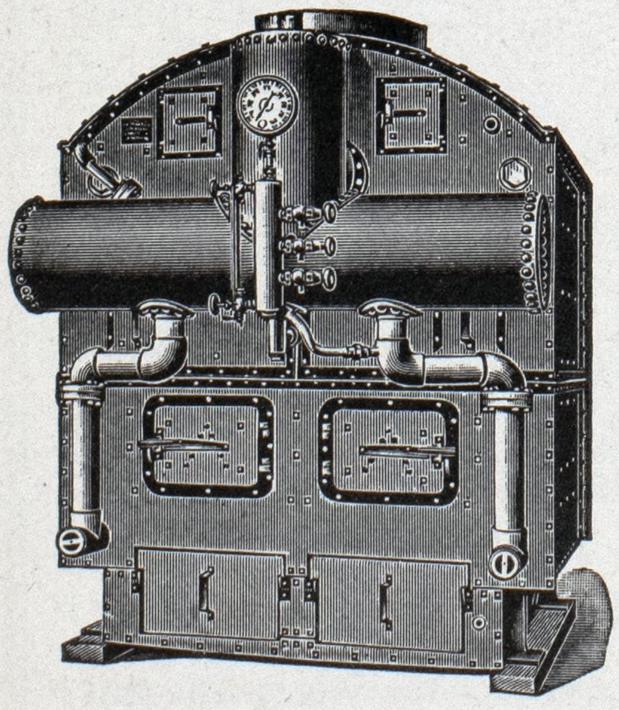

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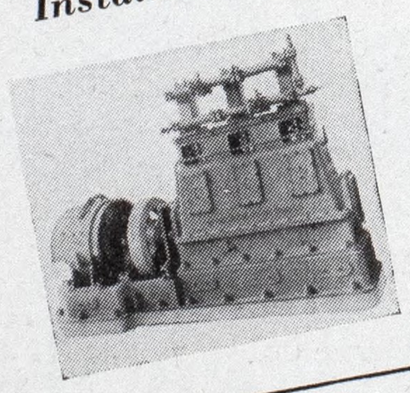

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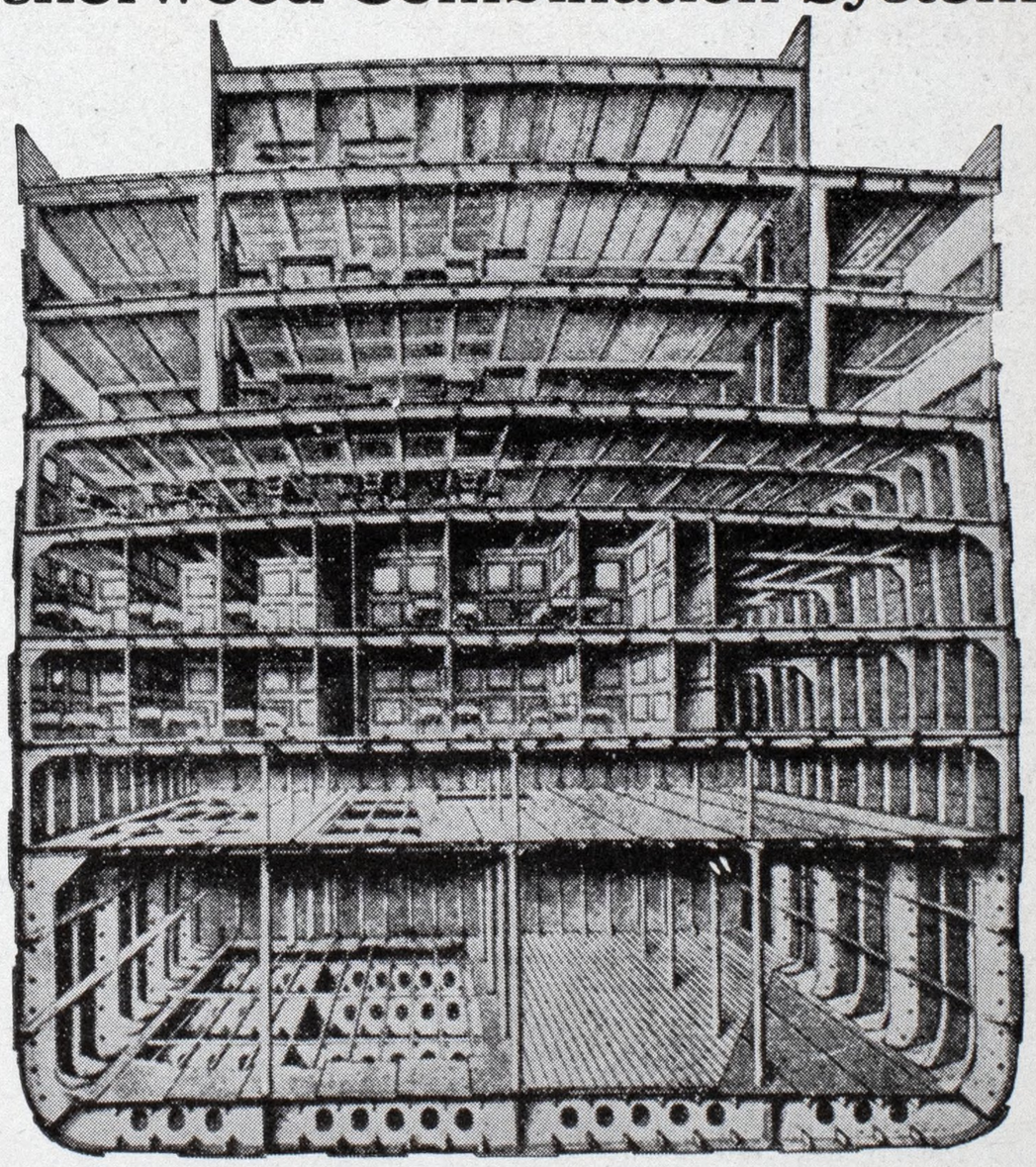

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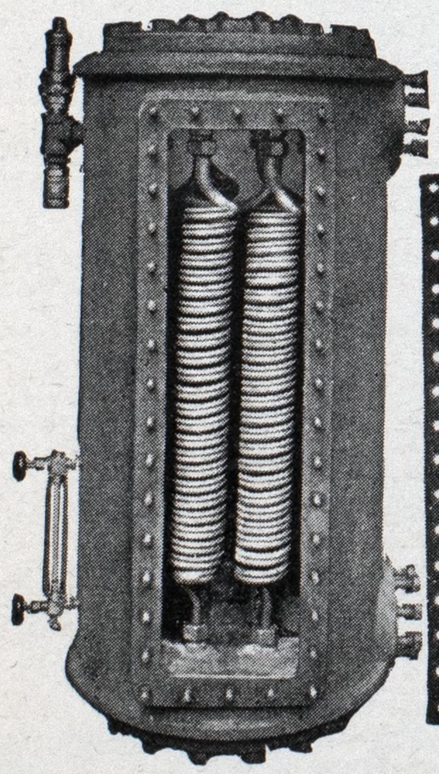

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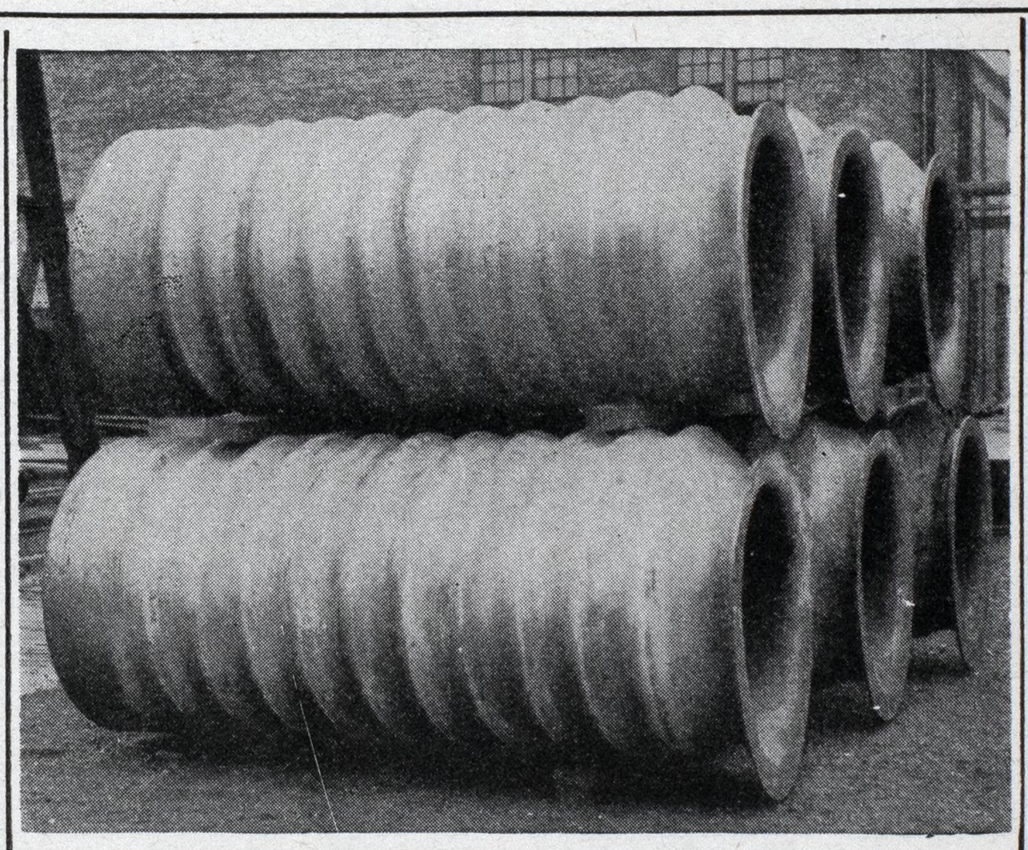

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FUEL OIL
Texas Co., The, 17 Battery Place, New York City
Vacuum Oil Co., 61 Broadway, New York City.

FURNACES (Corrugated Boiler)
Taylor Forge and Pipe Works, 1440 S. 49th St., Chicago, Ill.

FURNITURE
Marble & Shattuck Chair Co., 10200 Foster Ave., Cleveland, O.

GALLEY RANGES
Stamford Foundry Co., Stamford, Conn.

GAS (Acetylene Dissolved)
Prest-O-Lite Co., Inc., 30 East 42nd St., New York City.

GAS (Nitrogen and Oxygen)
Linde Air Products Co., 30 East 42nd St., New York City.

GAS (Welding and Cutting)
Prest-O-Lite Co., Inc., 30 East 42nd St., New York City.

GEARS (Marine Equipment)
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

GENERATING SETS
Engberg Division of Troy Engine & Machine Co., 2229 Vine St., St. Joseph, Mich.

GENERATING SETS (Direct Connected)
Engberg Division of Troy Engine & Machine Co., 2229 Vine St., St. Joseph, Mich.
General Electric Co., Schenectady, N. Y.
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

GENERATORS
Engberg Division of Troy Engine & Machine Co., 2229 Vine St., St. Joseph, Mich.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

GRAPHITE
Dixon, Jos., Crucible Co., Jersey City, N. J.

GRAPHITE GREASES
Dixon, Jos., Crucible Co., Jersey City, N. J.

GRAPHITE PAINT
Dixon, Jos., Crucible Co., Jersey City, N. J.

GRAPHITE PIPE JOINT COMPOUNDS
Dixon, Jos., Crucible Co., Jersey City, N. J.

GREASE
Texas Co., The, 17 Battery Place, New York City.
Vacuum Oil Co., 61 Broadway, New York City.

GREASE (Launching)
Texas Co., The, 17 Battery Place, New York City.
Vacuum Oil Co., 61 Broadway, New York City.

GYRO-PILOT (Automatic Steering)
Sperry Gyroscope Co., The, Brooklyn, N. Y.

HAMMER RAMS
Heppenstall Co., 46th & A.V.R.R., Pittsburgh, Pa.

HARDWARE (Marine)—See MARINE HARDWARE

HATCH FASTENERS
Mullholland Hatch-Fastener Co., Marion Bldg., Cleveland, O.

HAWSERS (Manila)
Columbian Rope Co., Auburn, N. Y.
Samson Cordage Works, Boston.
Whitlock Cordage Co., 46 South St., New York City.

HEATERS AND PURIFIERS (Feed Water)
Davis Engineering Co., 90 West St., New York City.
Griscom-Russell Co., 285 Madison Ave., New York City.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

HEATING EQUIPMENT
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

HEATING STOVES
Stamford Foundry Co., Stamford, Conn.

HOISTING ENGINES
Hyde Windlass Co., Bath, Me.

HOISTS (Air)
American Shipbuilding Co., Foot of W. 54th St., Cleveland.

INDICATORS (Direction & Revolution)
Sperry Gyroscope Co., The, Brooklyn, N. Y.

INDICATORS (Helm Angle)
Sperry Gyroscope Co., The, Brooklyn, N. Y.

INDICATORS (Speed)
Sperry Gyroscope Co., The, Brooklyn, N. Y.

ICE MACHINES—See REFRIGERATING MACHINERY

INSURANCE (Marine)
Boland & Cornelius, Marine Trust Bldg., Buffalo, N. Y.

LAMPS (Mazda and Arc)
General Electric Co., Schenectady, N. Y.

LIFEBOATS
Lane, C. M., Lifeboat Co., Inc., 856 Humboldt St., Brooklyn, N. Y.
Welin Davit & Boat Corp., 3-5 Vernon Ave., Long Island City, N. Y.

LIFESAVING EQUIPMENT
Lane, C. M., Lifeboat Co., Inc., 856 Humboldt St., Brooklyn, N. Y.

LIGHTING EQUIPMENT
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

LUBRICATING OIL
Texas Co., The, 17 Battery Place, New York City.
Vacuum Oil Co., 61 Broadway, New York City.

MACHINERY (Marine)
American Shipbuilding Co., Foot of W. 54th St., Cleveland, O.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Cooper-Bessemer Corp., The, Grove City, Pa.
Great Lakes Engineering Works, River Rouge, Mich.
Los Angeles Shipbuilding & Dry Dock Corp., San Pedro, Cal.
Manitowoc Ship Building Corp., Manitowoc. Wis.
Maryland Dry Dock Co., Baltimore Md.
Toledo Shipbuilding Co., Toledo, O.

MACHINISTS
American Shipbuilding Co., Foot of W. 54th St., Cleveland, O.
Busch-Sulzer Bros.-Diesel Engine Co., 2nd & Utah Sts., St. Louis, Mo.
New York Shipbuilding Co., Camden, N. J.

MANILA OAKUM—See OAKUM (Marine, Rope, Packings, Plumbers)

MATERIAL HANDLING EQUIPMENT
Smith, Leathem D., Dock Co., Sturgeon Bay, Wis.

MOTOR GENERATOR SETS
Engberg Division of Troy Engine & Machine Co., 2229 Vine St., St. Joseph, Mich.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

MOTORS (Electric)
Engberg Division of Troy Engine & Machine Co., 2229 Vine St., St. Joseph, Mich.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

MOTORS (Winch)
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

NAUTICAL INSTRUMENTS
Ritchie, E. S., & Sons, Brookline, Mass.
Sperry Gyroscope Co., The, Brooklyn, N. Y.

NAVIGATING INSTRUMENTS
White, Kelvin & Wilfrid O., Co., 112 State St., Boston. Mass.

NITROGEN (Gas)
Linde Air Products Co., 30 East 42nd St., New York City

OAKUM (Marine, Rope, Packings, Plumbers)
Stratford, George, Oakum Co., 165 Cornelison Ave., Jersey City, N. J.

OIL BURNING EQUIPMENT
Babcock & Wilcox Co., 85 Liberty St., New York City.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Coen Co., Inc., 610 S. Broadway, Los Angeles, Cal.
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.

OIL FOR ALL PURPOSES (Marine)
Texas Co., The, 17 Battery Place, New York City.
Vacuum Oil Co., 61 Broadway, New York City.

OXYGEN (Gas)
Linde Air Products Co., 30 East 42nd St., New York City.

PASSENGER SERVICE
Hamburg-American Line, 39 Broadway, New York City.

PIPE (Iron and Steel)
Taylor Forge and Pipe Works, 1440 S. 49th St., Chicago, Ill.

PISTON RODS
Heppenstall Co., 46th & A.V.R.R., Pittsburgh, Pa.

PLATES (Sheared Steel)
Alan Wood Steel Co., Conshohocken, Pa.

PLATES (Steel Floor)
Alan Wood Steel Co., Conshohocken, Pa.

PLATFORMS (Skid)
Truscon Steel Co., Pressed Steel Div., Youngstown, Ohio.

POWDERED COAL BURNERS
Coen Co., Inc., 610 S. Broadway, Los Angeles, Cal.

PROPELLER BLADES AND HUBS
Sheriffs Mfg. Co., Milwaukee, Wis.

PROPELLER WHEELS
American Shipbuilding Co., Foot of W. 54th St., Cleveland, O.
Great Lakes Engineering Works, River Rouge, Mich.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
Sheriffs Mfg. Co., Milwaukee, Wis.
Toledo Shipbuilding Co., Toledo, O.
Trout, H. G Co., 220 Ohio St., Buffalo, N. Y.

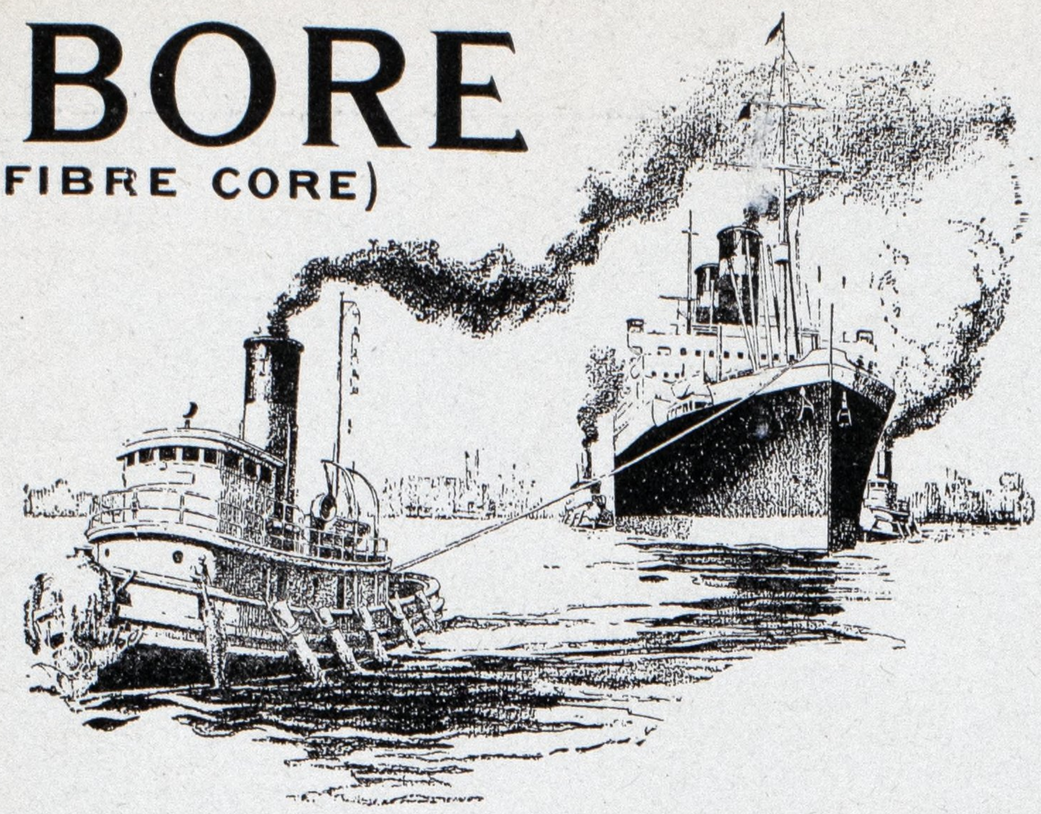
PROPELLERS
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Hyde Windlass Co., Bath, Me.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.

PULVERIZED COAL BURNERS
Todd Shipyards Corp., 25 Broadway, New York City.

PUMPS
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

FIBORE
(FIBRE CORE)



The World's
Strongest,
Most Durable
Manila Rope

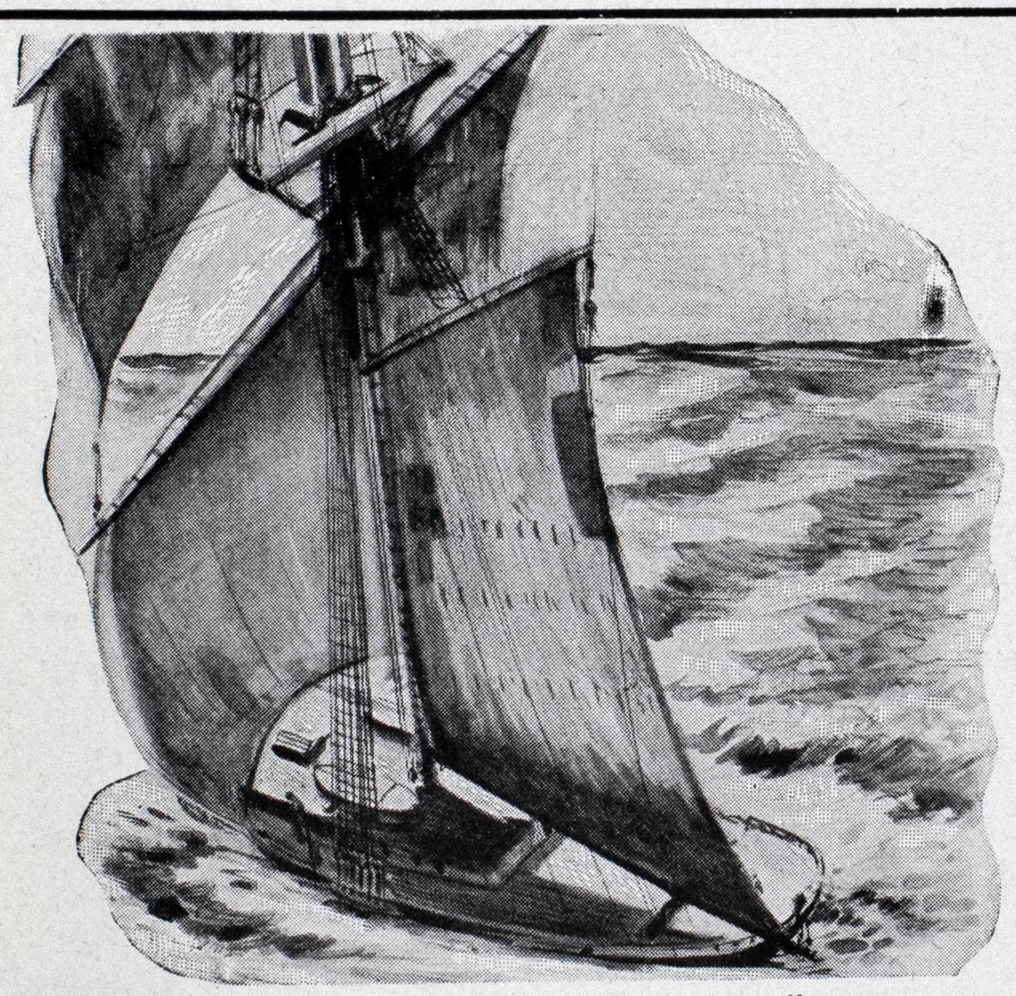
INCOMPARABLE!

WHITLOCK CORDAGE COMPANY

46 South Street
New York

Factory and Warehouses
Jersey City, N. J.

Branches
Chicago, Boston, Kansas City
and Houston



"So I went up aloft to the mizzen top"

The lookout who sights stormy weather in mid-ocean fears not wind or wave if deck, side and bottom seams are tight.

For one hundred years, shipmasters have depended on

STRATFORD OAKUM

to keep seams tight against heaviest weather.

Stratford Oakum is the world's best. Manufactured by an organization whose principal idea is to make oakum better than anybody else can possibly make it.

Stratford Oakum "stays put" in the seams. Economical—wastage is practically eliminated. Saves labor costs in caulking or spinning. Is well-finished, well-tarred, clean and elastic enough to keep the seams tight under all conditions.

Be sure you use Stratford Oakum.

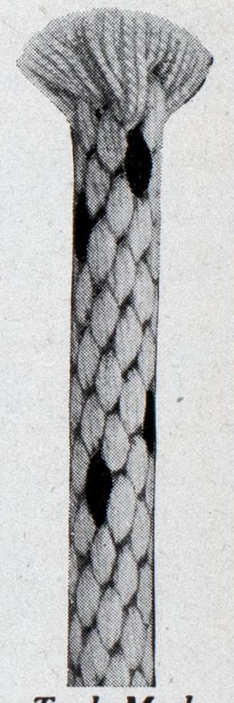
George Stratford Oakum Company
JERSEY CITY, NEW JERSEY
Also manufacturers of Cotton Wiping Waste

*1

SAMSON SPOT
Log Lines

Smooth, tough and durable; no adulterating material to stiffen it and decrease strength and durability. Solid braided of extra quality cotton yarn. Uniform in size and quality. Easily identified by the colored spots, our trade mark.

We also manufacture flag halyards, lead lines, tiller rope; solid braided cotton cord in all sizes for various marine uses. Ask for catalog and samples.



Trade Mark Reg. U.S. Pat. Off.

SAMSON CORDAGE WORKS

88 BROAD STREET — BOSTON, MASS.

TRADE MARK

PUMPS
Great Lakes Engineering Works, River Rouge, Mich.
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS (Ballast)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PUMPS (Bilge)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PUMPS (Boiler Feed)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PUMPS (Direct Acting)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PUMPS (Fuel Oil)
Coen Co., Inc., 610 S. Broadway, Los Angeles, Cal.

PUMPS (Power)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PUMPS (Steam)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PUMPS (Vacuum)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PURIFICATION SYSTEMS—See WATER PURIFICATION SYSTEMS

RADIO COMPASS AND DIRECTION FINDER
Radiomarine Corp. of America, 66 Broad St., New York City.

RADIO EQUIPMENT
Radiomarine Corp. of America, 66 Broad St., New York City.

RAFTS
Lane, C. M., Lifeboat Co., Inc., 856 Humboldt St., Brooklyn, N. Y.

RANGES
Stamford Foundry Co., Stamford, Conn.

REPAIRS
Los Angeles Shipbuilding & Dry Dock Corp., San Pedro, Cal.
Maryland Dry Dock Co., Baltimore. Md.

REPAIRS (Electric)
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

REPAIRS (Marine)
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bath Iron Works Corp., Bath, Me.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Canada Steamship Lines, P. O. 2435, Montreal, Can.
Chicago Shipbuilding Co., So. Chicago, Ill.
Collingwood Shipyards, Inc., Collingwood, Ont., Canada.
Great Lakes Engineering Works, River Rouge, Mich.
Manitowoc Ship Building Corp., Manitowoc, Wis.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
New York Shipbuilding Co., Camden, N. J.
Sun Shipbuilding & Dry Dock Co., Chester, Pa.
Todd Shipyards Corp., 25 Broadway, New York City.
Toledo Shipbuilding Co., Toledo, O.
United Dry Docks, Inc., 11 Broadway, New York City

REPAIRS (Marine Engine)
Collingwood Shipyards, Inc., Collingwood, Ont., Canada.

REPAIRS (Turbine)
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

REVOLUTION COUNTERS
Cummings Machine Works, 255 Atlantic Ave., Boston, Mass.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

RINGS (Steel)
Heppenstall Co., 46th & A.V.R.R., Pittsburgh, Pa.

ROLLS (Steel)
Heppenstall Co., 46th & A.V.R.R., Pittsburgh, Pa.

ROPE (Manila, Net, Sisal, and Other Hard Fiber Cordage)
Columbian Rope Co., Auburn, N. Y.
Samson Cordage Works, Boston.
Whitlock Cordage Co., 46 South St., New York City.

ROPE (Transmission)
Columbian Rope Co., Auburn, N. Y.

ROPE OAKUM
Stratford, George, Oakum Co., Jersey City, N. J.

RUBBER TILE
Selby, Battersby & Co., 33rd & Arch Sts., Philadelphia.

RUST PREVENTATIVE (Oil)
Texas Co., The, 17 Battery Place, New York City.
Vacuum Oil Co., 61 Broadway, New York City.

SAFETY VALVES (Marine)
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.

SCHOONERS (Auxiliary)
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Toledo Shipbuilding Co., Toledo, O.

SEARCHLIGHTS (High Intensity)
Sperry Gyroscope Co., The, Brooklyn, N. Y.

SEARCHLIGHTS (Incandescent and Arc)
General Electric Co., Schenectady, N. Y.
Sperry Gyroscope Co., The, Brooklyn, N. Y.

SELF UNLOADING EQUIPMENT
Smith, Leathem D., Dock Co., Sturgeon Bay, Wis.

SEPARATORS (Oil)
Babcock & Wilcox Co., 85 Liberty St., New York City.

SHEAR BLADES & KNIVES
Heppenstall Co., 46th & A.V.R.R., Pittsburgh, Pa.

SHEETS (Blue Annealed)
Alan Wood Steel Co., Conshohocken, Pa.

SHIPBUILDERS
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bath Iron Works Corp., Bath, Me.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Canada Steamship Lines, P. O. Box 2430, Montreal, Can.
Collingwood Shipyards, Inc., Collingwood, Ont., Canada.
Great Lakes Engineering Works, River Rouge, Mich.
Los Angeles Shipbuilding & Dry Dock Corp., San Pedro, Cal.
Manitowoc Ship Building Corp., Manitowoc, Wis.
Maryland Dry Dock Co., Baltimore, Md.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
New York Shipbuilding Co., Camden, N. J.
Smith, Leathem D., Dock Co., Sturgeon Bay, Wis.
Sun Shipbuilding & Dry Dock Co., Chester, Pa.
Todd Shipyards Corp., 25 Broadway, New York City.
Toledo Shipbuilding Co., Toledo, O.
United Dry Docks, Inc., 11 Broadway, New York City.

SHIPBUILDING SYSTEMS
Isherwood, J. W., & Co., Ltd., 17 Battery Place, New York City.

SHIP STABILIZERS
Sperry Gyroscope Co., The, Brooklyn, N. Y.

SKID PLATFORMS (Lift Truck)
Truscon Steel Co., Pressed Steel Div., Youngstown, O.

SLEEVES (Tail Shaft)
Shenango-Penn Mold Co., Oliver Bldg., Pittsburgh, Pa.

SPUN OAKUM
Stratford, George, Oakum Co., Jersey City, N. J.

STEAMSHIP LINES (Passenger and Freight)
Hamburg-American Lines, 39 Broadway, New York City.

STEAM GAGES
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.

STEAM TRAPS
Davis Engineering Co., 90 West St., New York City.

STEEL (Electric Induction)
Heppenstall Co., 46th & A.V.R.R., Pittsburgh, Pa.

STEEL BARGES—See BARGES (Steel)

STEERING ENGINES
Hyde Windlass Co., Bath, Me.

STEERING GEARS
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Hyde Windlass Co., Bath, Me.

STORAGE BATTERIES—See BATTERIES

STOVES
Stamford Foundry Co., Stamford, Conn.

STRAINERS (Oil)
Coen Co., Inc., 610 S. Broadway, Los Angeles, Cal.

SWITCHBOARDS
Engberg Division of Troy Engine & Machine Co., 2229 Vine St., St. Joseph, Mich.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

TELEMOTORS
Hyde Windlass Co., Bath, Me.

TORSION METERS
Cummings Machine Works, 255 Atlantic Ave., Boston, Mass.

TOWING
Moran Towing & Transportation Co. 17 Battery Place, New York City.

TOWING LINES
Columbian Rope Co., Auburn, N. Y.
Whitlock Cordage Co., 46 South St., New York City.

TRACTORS
Clark Tructractor Co., Battle Creek, Mich.
Elwell-Parker Electric Co., The, 4205 St. Clair Ave., Cleveland, O.
Terminal Engineering Corp., 17 Battery Place, New York City.

TRANSMISSION (Rope)—See ROPE (Transmission)

TREADS (Steel Stair & Ladder)
Alan Wood Steel Co., Conshohocken, Pa.

TRUCKS
Clark Tructractor Co., Battle Creek, Mich.
Elwell-Parker Electric Co., The, 4205 St. Clair Ave., Cleveland, O.
Lewis-Shepard Co., Watertown Sta., 125 Walnut St., Boston.

TRUCKS (Lift)
Lewis-Shepard Co., 125 Walnut St., Boston, Mass.
Terminal Engineering Corp., 17 Battery Place, New York City.

TURBINES (Electric)
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

TURBINES (Marine)
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

TURBINES (Steam)
DeLaval Steam Turbine Co., Trenton, N. J.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

TWINE AND ROPE
Columbian Rope Co., Auburn, N. Y.
Samson Cordage Works, Boston.
Whitlock Cordage Co., 46 South St., New York City.

VALVES AND FITTINGS
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.

VENTILATING EQUIPMENT
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.

WATER PURIFICATION SYSTEMS
Griscom-Russell Co., 285 Madison Ave., New York City.

WELDERS (Electric Arc)
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

WELDING AND CUTTING GAS
Prest-O-Lite Co., Inc., 30 East 42nd St., New York City.

WHISTLES
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.

WINCHES
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Dake Engine Co., Grand Haven, Mich.
Hyde Windlass Co., Bath, Me.

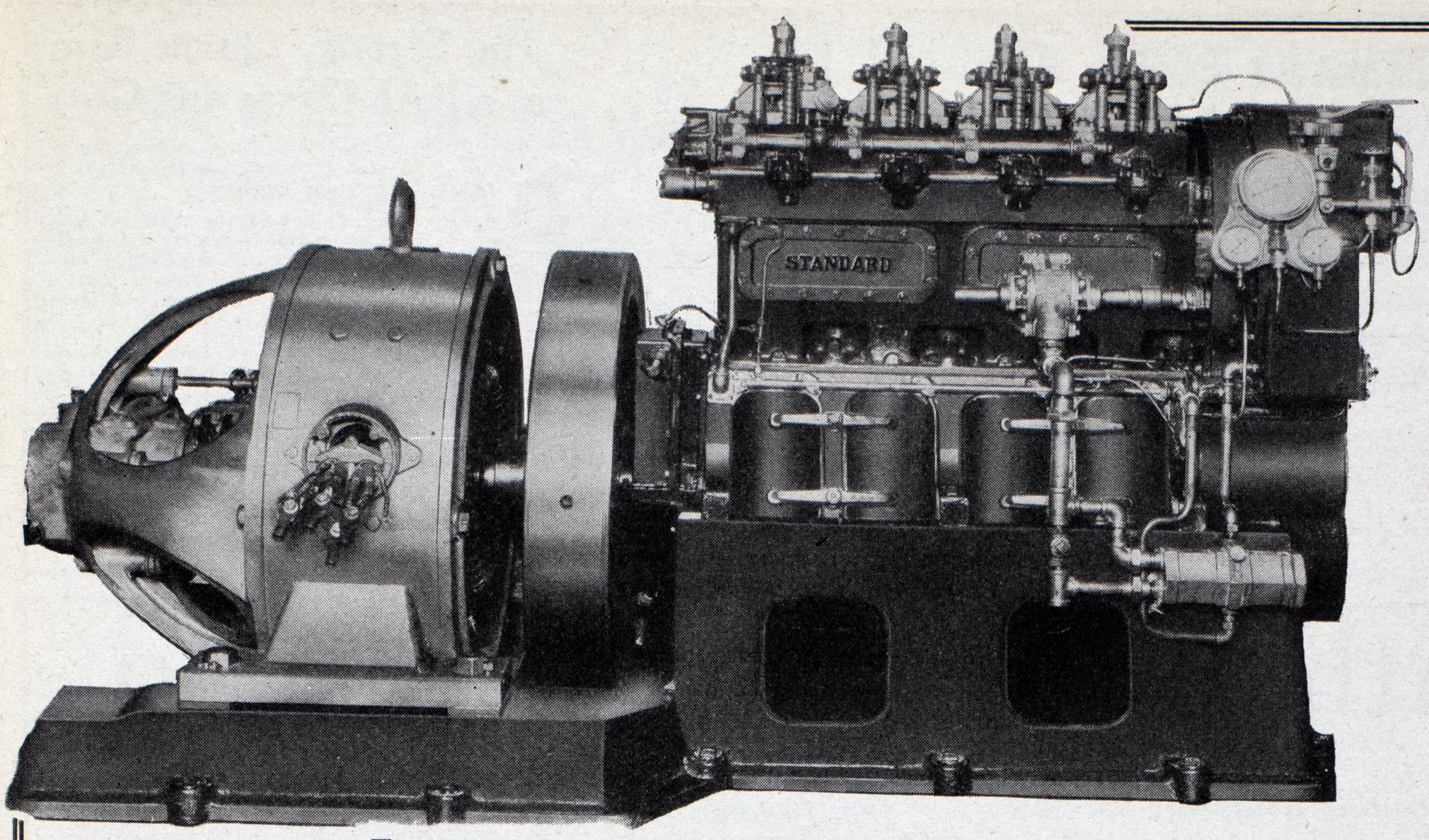
WINDLASSES
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Dake Engine Co., Grand Haven, Mich.
Hyde Windlass Co., Bath, Me.

WIRELESS MESSAGE SERVICE
Radiomarine Corp. of America, 66 Broad St., New York City.

WIRELESS SETS AND APPARATUS
Radiomarine Corp. of America, 66 Broad St., New York City.

WORKBOATS
Lane, C. M., Lifeboat Co., Inc., 856 Humboldt St., Brooklyn.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



35 K. W. Diesel Generating Set For Gulf Refining Co.

It Will Pay You to get our quotations
on Diesel electric generating sets 20 to 300 K.W.
Also get our quotation on Propelling Engines 40-500 H.P.

STANDARD MOTOR CONSTRUCTION COMPANY

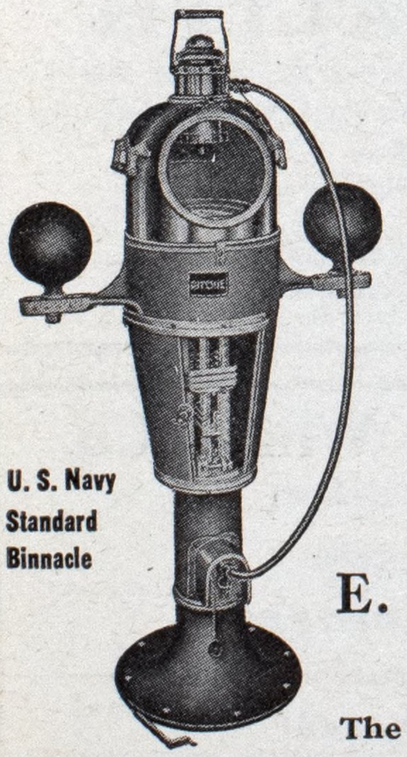
184 Whiton St. **Jersey City, N. J. U. S. A.**

LANE LIFEBOATS

WERE SUPPLIED TO THE

BYRD ANTARCTIC EXPEDITION

C. M. Lane Lifeboat Co., Inc.
Brooklyn, N. Y.



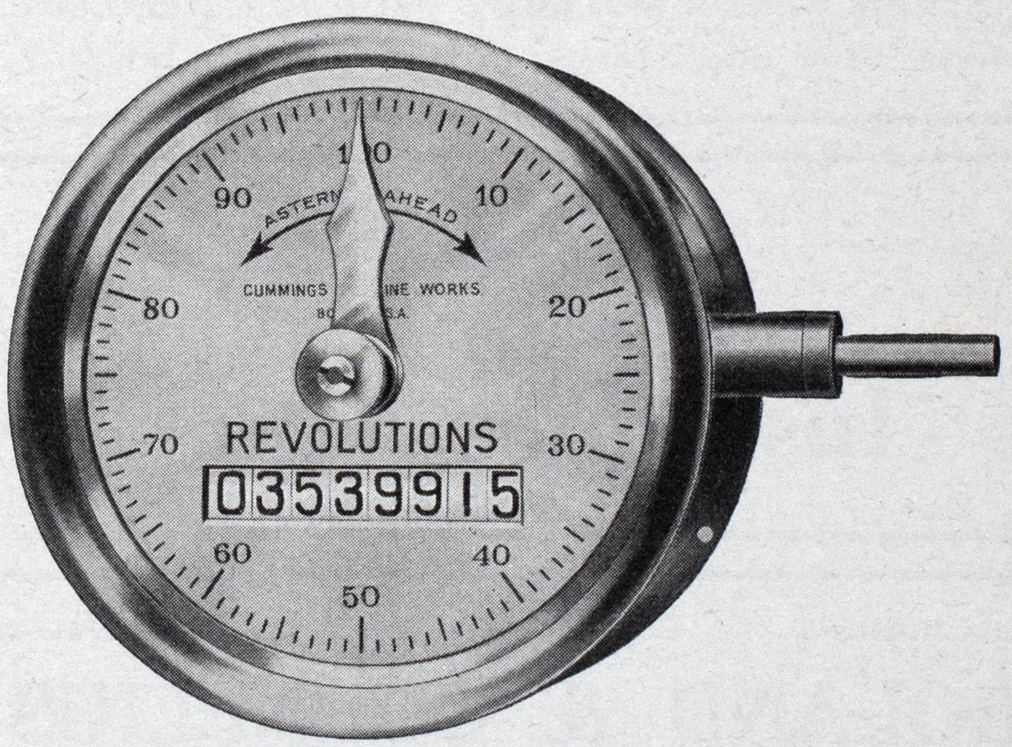
THE RITCHIE LIQUID COMPASS

The Standard Liquid Compass the world over.
Used Exclusively in U. S. Navy for over 40 years.
Over 65,000 on Merchant Vessels in all parts of the world.
Made in all sizes 2 to 12" dia.
Magnets for adjusting Purposes.

E. S. RITCHIE & SONS
Brookline, Mass., U. S. A.
Agents for the Great Lakes,
The Upson-Walton Company, Cleveland, Ohio

Cummings

Combination Counter & Telltale



Adopted by the Panama Pacific Line on
S. S. California
S. S. Virginia
S. S. Pennsylvania

Cummings Revolution Counters and Gary-Cummings Torsion Meters
have been used on
U. S. Naval Vessels Since 1912

Cummings Machine Works

255 Atlantic Ave., Boston, Mass.

Star Brass Mfg. Co.

53 Oliver Street -::- Boston, Mass.

MANUFACTURERS OF

Accurate "Non-corrosive" Pressure and Recording Gages, Revolution Counters, Marine Clocks.

Dead Weight Gage Testers.

Marine Safety and Relief Valves for all pressures.

Marine Whistles and Sirens.

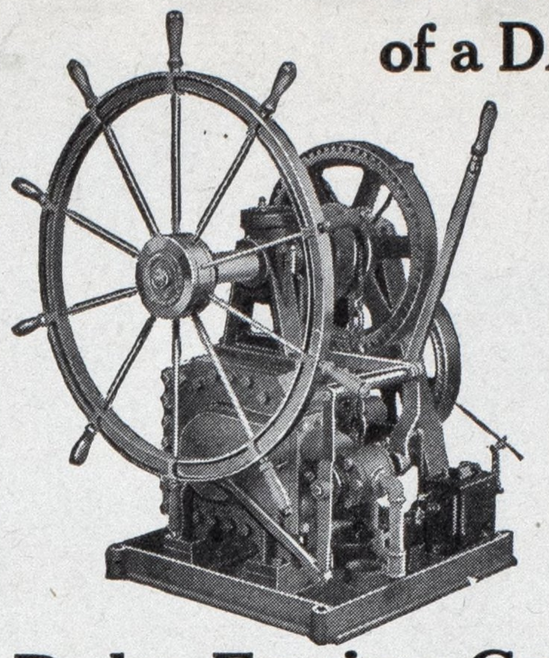
Extra Heavy Renewable Globe, Angle and Check Valves.

Star Outside Spring Steam Engine Indicators.

HIGH GRADE THROUGHOUT
SPECIFY AND ORDER THE BEST.

Branches: CHICAGO PITTSBURGH NEW YORK

The Strong, Quick Arm of a DAKE Steering Gear



on the tiller chain of your tug or steamer means greater efficiency, safety and economy.

The Dake Engine has no dead center; it is always alert, and starts instantly in either direction. This insures easier, quicker and better handling of your boat and saves time, coal and accidents.

The Dake fits into your pilot house and has a hand steering combination feature for emergency use.

Dependable gears at extremely moderate prices.

Ask any skipper who is shipmates with one

Dake Engine Co., Grand Haven, Mich.

Leathem D. Smith Dock Co.

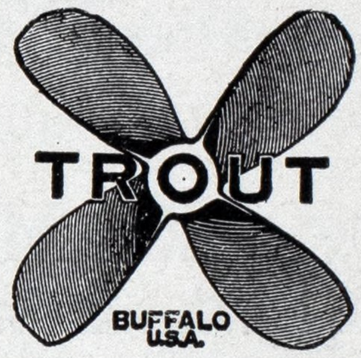
Sturgeon Bay, Wisconsin

Self-Unloading Boats our Specialty *Self Propelled and Self Unloading River Boats*
Wood and Steel Repair Work

Propeller Wheels and Blades

to fit any hub.

Sheriffs Manufacturing Co.
Established 1854
Milwaukee, Wis.



Oldman-Magee Boiler Works, Inc.

Boilers, Tanks, Stacks, Structural Work and Castings

Boiler Repairing Promptly Attended to Day or Night
MARINE WORK A SPECIALTY ELECTRIC WELDING
Works: 36-40 Illinois Street - BUFFALO, N. Y.

ANDREW J. MORSE & SON, Inc.

221 High Street BOSTON, MASS.
Established 1837

Diving Apparatus and Submarine Armor
Fire Department Supplies
The Morse Monitor Nozzle
Callahan Shut-Off Nozzle

Vessel and Insurance Agents

THE MULHOLLAND HATCH-FASTENER COMPANY

Marion Building, Main 0272 **Cleveland, Ohio**

Manufacturers of the Mulholland Simplex and Security Hatch Fasteners.
For Ocean and Lake Trade

OVER 225,000 SETS NOW IN USE ON THE GREAT LAKES

John J. Boland Adam E. Cornelius

BOLAND & CORNELIUS

VESSEL OWNERS AND BROKERS
Marine Insurance Agents
Marine Trust Building BUFFALO, N. Y.

Remember!

SELBALITH

may be safely applied in winter without danger of freezing,—an advantage to lake shipowners.

Write for free samples and quotations.

Selby, Battersby & Co.
Floorcrafters
Wilford Bldg., 33rd and Arch Sts. Phila., Pa.

Edward P. Farley & Co.

Incorporated

Steamship Owners, Agents and Brokers

11 Broadway—New York

Kelvin & Wilfrid O. White Co.

112 State Street, Boston

Ship Compasses
Navigational Equipment
Contracts a Specialty

New York and Montreal

Classified Advertisements

For Sale and Miscellaneous—Help and Positions Wanted

For Sale and Miscellaneous Advertisements
10c per word—minimum advertisement—$3.00

Six words must be added for box address.

To insure insertion, advertisements must reach us by the 10th of the month.

Help Wanted Advertisements
6c per word—minimum advertisement—$3.00

Position Wanted Advertisements
4c per word—minimum advertisement—$1.00

Please have remittance accompany order.

For Sale

SEABURY BOILER: WATER TUBE BOILER No. 495, built in 1924, used 3 months. Equipped with double oil burners using heavy oil.

Speedway Engine for the above boiler, 8½ x 14 x 23 x 12. Address Box 409, MARINE REVIEW, Cleveland, Ohio.

FOR SALE—STEEL TOW BARGE 227′ LONG BY 38′ BEAM BY 19′6″ DEEP. FOR ADDITIONAL DETAILS AND WHERE CAN BE INSPECTED WRITE BOX 411, MARINE REVIEW, CLEVELAND, OHIO.

FOR SALE: STEAMER GRANDON. LENGTH 64 ft. Beam 16 ft. For further particulars write The Post Fish Co., Sandusky, Ohio.

Position Wanted

SHIP DESIGNER AND CONSTRUCTOR with thirty years experience is open for a position. Prefer Great Lakes location. Address Box 412, MARINE REVIEW, Cleveland, Ohio.

For Sale

TUG MANOMET
FOR SALE
750 H.P.—New Boiler
The Central Dredging Co.
Chicago

FOR SALE
STEEL TOW BARGE
"SWEDEROPE"
227 ft. long, 38 ft. beam, 19′6″ deep
DETROIT SULPHITE TRANSPORTATION CO.
9125 W. JEFFERSON AVE.,
DETROIT, MICH.

FOR SALE
5000-Ton Bulk Carrier
Steamer Rockefeller
Toledo, Ohio
Recently rebuilt.
The Central Dredging Co.
Chicago, Ill.

For Sale

FOR SALE
COMPLETE COMPRESSOR INSTALLATION

1—9 x 8 ER-1 Compressor with Idler, unloader and lubricator.
1—30 H.P. G. E. Motor 3 phase, 60 cycle, 220 volt A.C., base, pulley and starter.
1—R-6 Receiver, 36″ x 8′, complete with all fittings.

PERFECT CONDITION.
REDWOOD LINE, INC.
1421 New Orleans Bank Bldg.,
New Orleans, La.

FOR SALE STEAM TUG SUITABLE FOR towing or fishing. 80 ft. long, 16½ ft. beam, 9 ft. draft. Three inch white oak plank, in best condition. 130 lbs. steam, 14½ by 16. Engine fully equipped. Boat in commission now. Box 413, MARINE REVIEW, Cleveland, Ohio.

U. S. ENGINEERS OFFICE, POLAND AND Dauphine Sts., New Orleans, La. SEALED BIDS, in duplicate, will be received until 3 P.M., January 15, 1930, and then publicly opened, for furnishing all labor and materials and performing all work for constructing and delivering afloat one 65 ft. 6 in. steel Diesel driven tugboat. Further information furnished on application.

TO OUR SUBSCRIBERS

The classified section of MARINE REVIEW is for your convenience—its value is proving very worthwhile to everyone who uses it to buy and sell.

If you want to buy or sell ships or marine equipment—need a man for your organization—make it known to the entire marine industry through the use of classified advertising in MARINE REVIEW.

Mail copy for your advertisement in the February issue today, so it reaches us before January 20.

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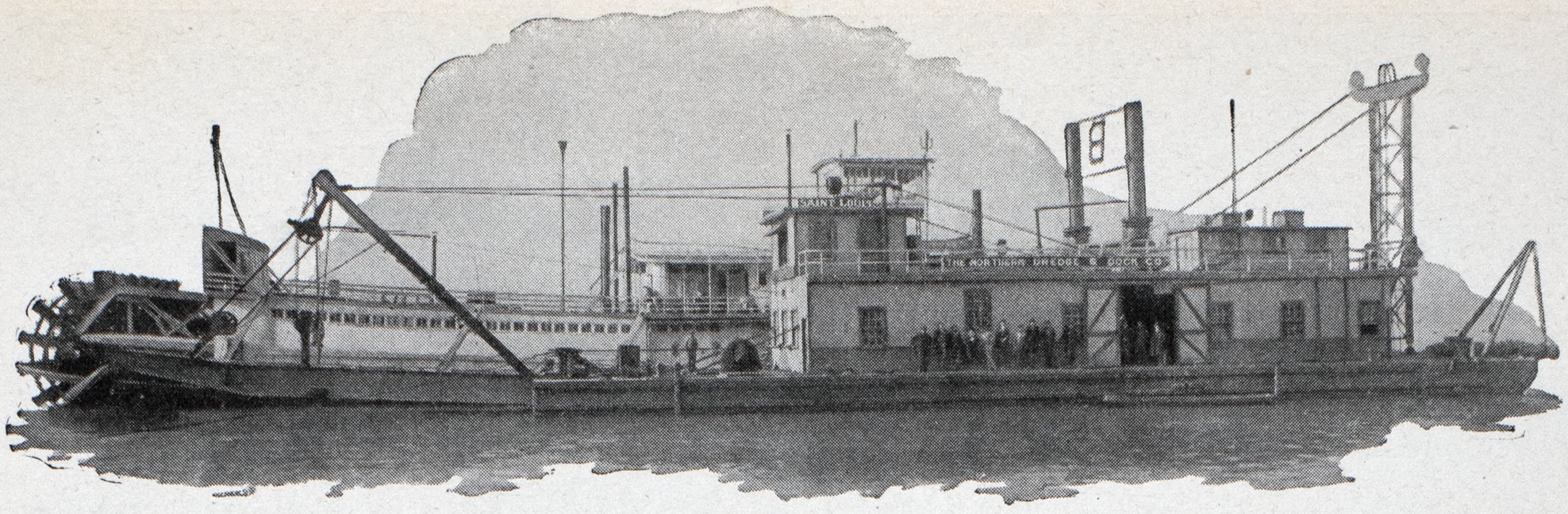


The *St. Louis*

1798 Miles of G-E Service

THE big dredge *St. Louis* was working under 25-cycle power when a hurry call came to report 1798 miles away. There, only 60-cycle power was available. To save time it was decided to make the change-over en route.

On the river and ocean voyage G-E Service Shop men, hampered by cramped quarters and inadequate facilities, rewound a 1000-hp. motor, installed five other motors, rebuilt the switchboard, and rewired the dredge.

When the *St. Louis* reached its port, it was completely equipped to join the fleet of dredges that in the next four years converted land under ten feet of water into an island of 832 acres.

Davis Island, Tampa, Florida

You are never out of reach of G-E service. Express will reach the nearest service shop in a day. If the job is too large to ship, experienced men will come to you. G-E Service Shops are located in the following cities:

Atlanta	Lynn
Buffalo	Minneapolis
Chicago	New York
Cincinnati	Seattle
Cleveland	Oakland
Dallas	Philadelphia
Detroit	Pittsfield
Erie	Pittsburgh
Fort Wayne	St. Louis
Kansas City	Salt Lake City
Los Angeles	Schenectady

91-36

JOIN US IN THE GENERAL ELECTRIC HOUR, BROADCAST EVERY SATURDAY AT 9 P.M., E.S.T. ON A NATION-WIDE N.B.C. NETWORK

GENERAL ELECTRIC SERVICE SHOPS

Columbian Rope

Take Aboard a Rope That's Weatherproofed

You can tell by the red, white and blue surface markers that the rope is Columbian *Tape-Marked* Pure Manila.

Columbian is built to withstand all variations of climate. By reason of the Columbian method of waterproofing, all *Tape-Marked* Rope is flexible, wet or dry. This important feature goes hand in hand with Columbian's great strength and durability, making it the ideal rope to take aboard.

COLUMBIAN ROPE COMPANY

Auburn, N. Y. *"The Cordage City"*

Branches:- New York Chicago Boston New Orleans Philadelphia

Built-

at Newport News

SINCE the inception nearly one half a century ago of the Newport News Shipbuilding and Dry Dock Company, one unaltering ideal has guided its efforts. This ideal has ever been to build good ships for every service; ships that possess those qualities which can only come from the hearts as well as the minds of designers and the hands of craftsmen, tuned to the work through love and understanding of all that a ship should be.

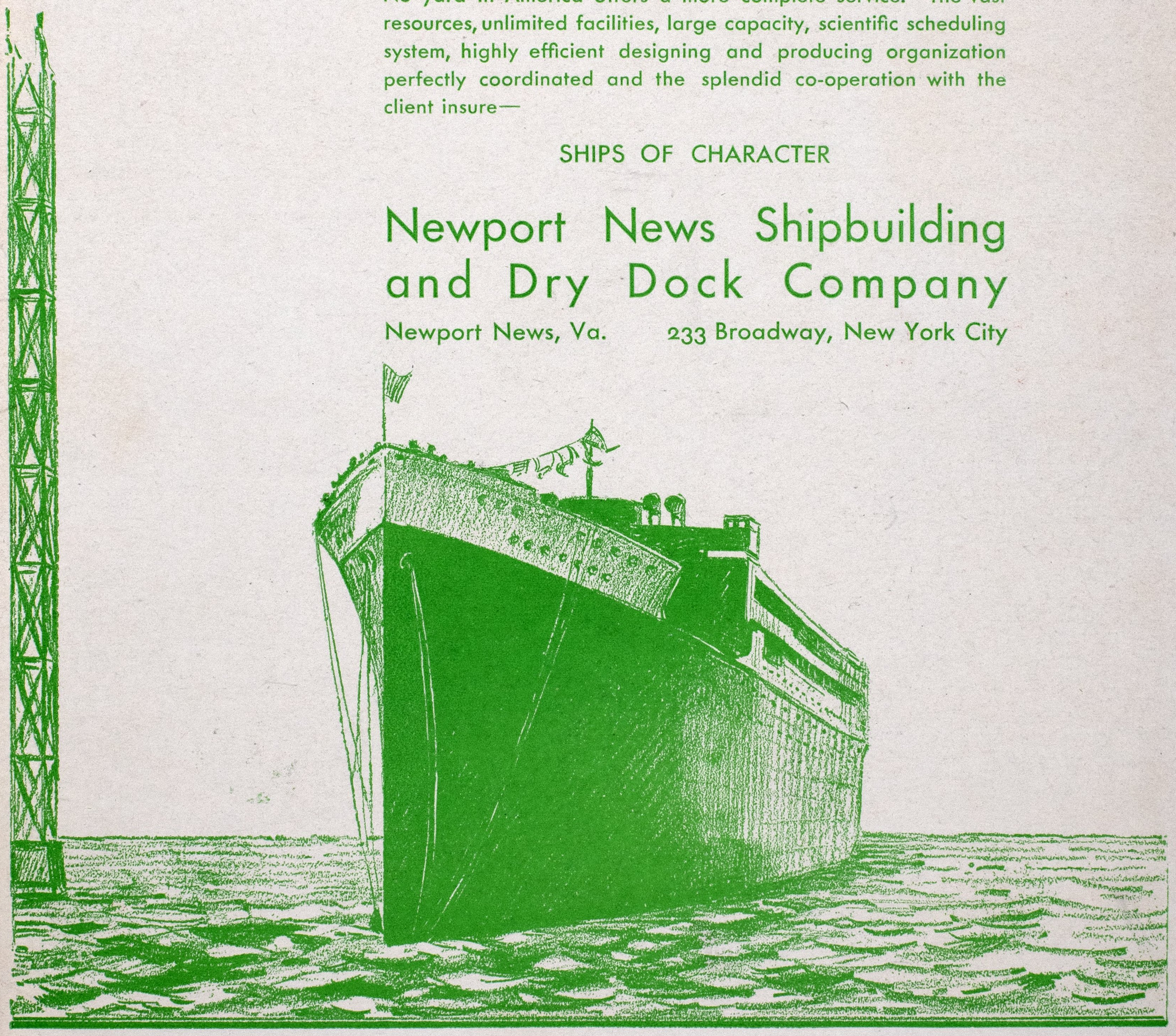
BUILT AT NEWPORT NEWS is more than a phrase, it is a symbol of genuine character and a guarantee of a production of exceptional quality.

No yard in America offers a more complete service. The vast resources, unlimited facilities, large capacity, scientific scheduling system, highly efficient designing and producing organization perfectly coordinated and the splendid co-operation with the client insure—

SHIPS OF CHARACTER

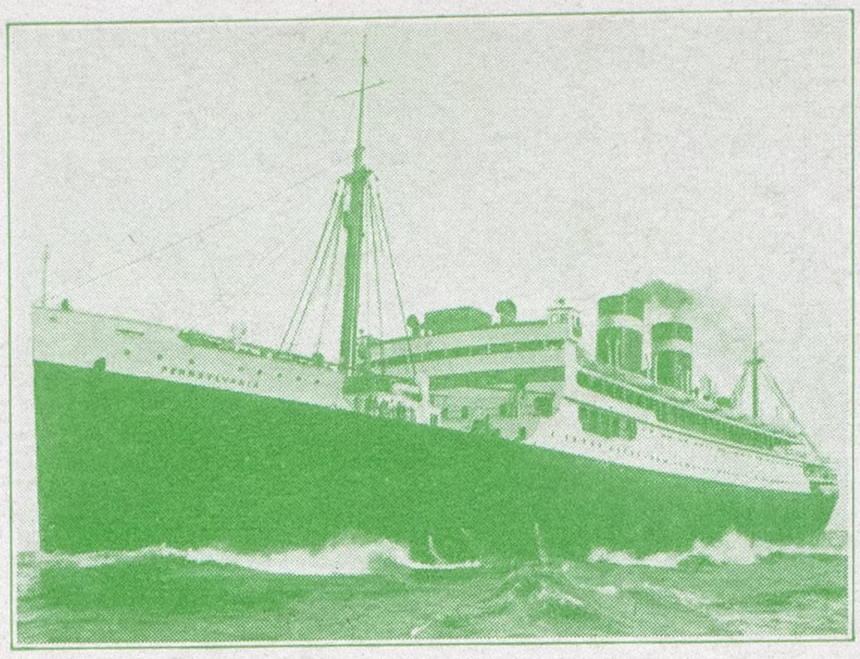
Newport News Shipbuilding and Dry Dock Company

Newport News, Va. 233 Broadway, New York City



S. S. Pennsylvania of the Panama Pacific Line. Sturtevant Equipped.

Photo—Ed Levick, N. Y.



Sturtevant TRADE MARK

Sturtevant Equipment — Dependable and Efficient

Dependable and efficient—that is the reputation of Sturtevant Marine Equipment....a reputation gained over a period of many years successful operation on all types of ships. And many times, operating under the most adverse conditions.

These outstanding performances are due to the high efficiency, economical operation, long service and extraordinary freedom from trouble that is characteristic of Sturtevant apparatus.

Sturtevant Marine Equipment is adapted to all types of ships, from small yachts to great ocean liners, as well as all classes of naval ships. Our Marine Department will gladly cooperate with you in determining the type of equipment to meet your requirements.

B. F. STURTEVANT COMPANY, HYDE PARK, BOSTON, MASS.

Sales Engineering Offices in Principal Cities

Sturtevant REG. U. S. PAT. OFF. *Marine Equipment*

Heating and Ventilating Equipment— Mechanical Draft Equipment—Turbines—Motors—Blowers— Ventilating Sets—Heaters—Generator Sets—Exhausters Gasoline and Steam Engines

If You Want The Best Specify

Hyde

S. S. "A. F. HARVEY" owned by Pittsburgh Steamship Co. and built by Great Lakes Engineering Works.

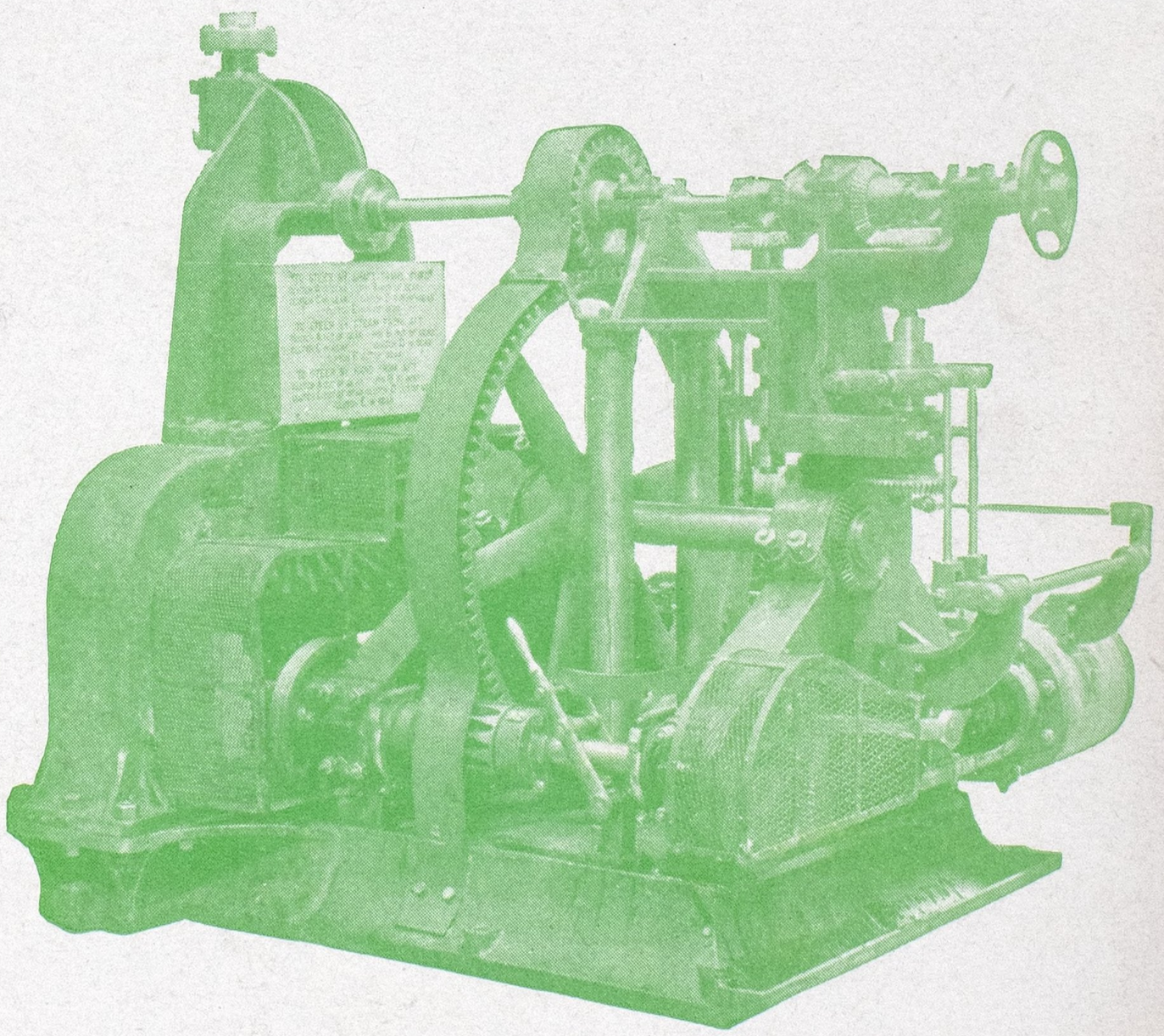
S. S. "B. F. AFFLECK" owned by Pittsburgh Steamship Co. and built by Toledo Shipbuilding Co.

S. S. "S. T. Crapo" owned by Huron Transportation Co. and built by Great Lakes Engineering Works.

These three fine new boats are all equipped with

Hyde

Quadrant Type Steering Gear
Spur Gear Windlass
Mooring Winches
Hatch Winches



HYDE Quadrant Type Steering Gear

Hyde Windlass Company

Bath, Maine